Annual AVMA Meeting
Detroit, Michigan
August 20-24, 1961

Journal

OF THE

AMERICAN VETERINARY MEDICAL ASSOCIATION

Fluid and Electrolyte Therapy of Monkeys

THIS REPORT describes studies in which monkeys were maintained for long periods on an easily prepared oral solution designed to meet scientific requirements. Page 527

Thelaziasis in Cats and Dogs

CASE HISTORIES of ocular thelaziasis in 2 cats and 1 dog are given. Page 537

Intrathoracic Thyroid in a Dog

ECTOPIC thyroid tissue was found at the base of the aorta in a dog—its significance is discussed. Page 539

Herd Treatment for Bovine Foot Rot

TREATMENT of foot rot was successful in a herd of cattle fed sulfabromomethazine in pelleted feed. Page 550

Vol. 138 May 15, 1961 No. 10

CS CORVAC AND SERATRATE®

Total defense against hog cholera—CORVAC and SERATRATE, produced by Corn States Laboratories, Inc.

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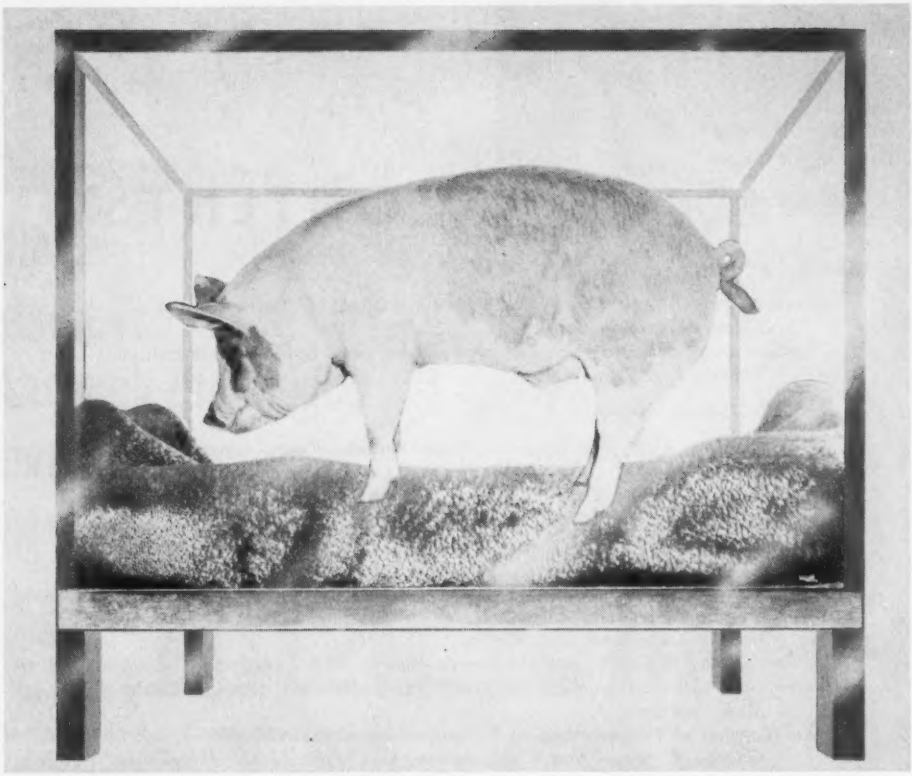

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Journal

OF THE
AMERICAN VETERINARY
MEDICAL ASSOCIATION

Vol. 138 No. 10 May 15, 1961

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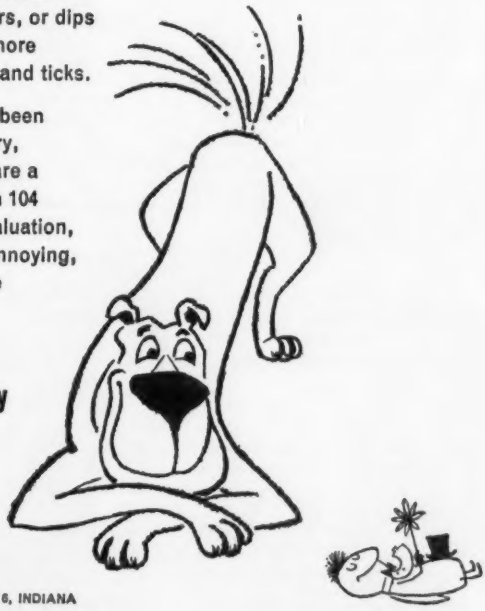

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Correspondence

Plastic Envelopes

Dear Sir:

Plastic mailing envelopes are first-rate.

M.E.M.
Montana

The plastic cover for the JOURNAL is a vast improvement. Public educational value of the "see-through" is a definite advantage.

C.H.C.
Michigan

In January I wrote . . . criticizing the experiment of mailing the JOURNAL without envelopes . . . .

The April 1 JOURNAL arrived enclosed in a plastic wrapper. . . .

Especially because I criticized the earlier practice, I should like now to congratulate . . . the AVMA staff . . . in the choice of and decision to use the new plastic package. I believe it affords the JOURNAL better protection than did the original brown envelopes particularly because of its water-repellent properties and its resistance to tearing and parting which, as you know, is not uncommon at the corners.

. . . delivery of the JOURNAL in its pristine state is important to each member. I feel that the new plastic wrap lends an appearance of modernity while possessing greater durability for withstanding the assaults of both weather and man.

R.A.H.
Pennsylvania

The new polyethylene plastic envelopes are giving a better protection than no envelopes at all. However, they are not as good as the old envelopes. Although the April 1 JOURNAL was not as badly damaged, outside corners were curled up.

Therefore, I do prefer using the plain brown envelopes, since they cost virtually the same amount as the plastic ones and offer the complete protection of the JOURNAL.

A.V.
New York

I like your idea of mailing the JOURNAL in the new plastic wrappers. It is a very great improvement over no covering and has advantage over the old envelopes by attracting attention.

J.H.
Indiana

I've just read a new low in our JOURNAL. So you have to put it into a plastic bag so people will read it. If veterinarians are accustomed to tossing the JOURNAL "you know where," I'm sure it will slide easier with a plastic covering.

The five thousand dollars spent to put a plastic covering on the JOURNAL when it is mailed, certainly could be used for better causes.

Q.C.M.
Wisconsin

(*Continued on adv. p. 6*)

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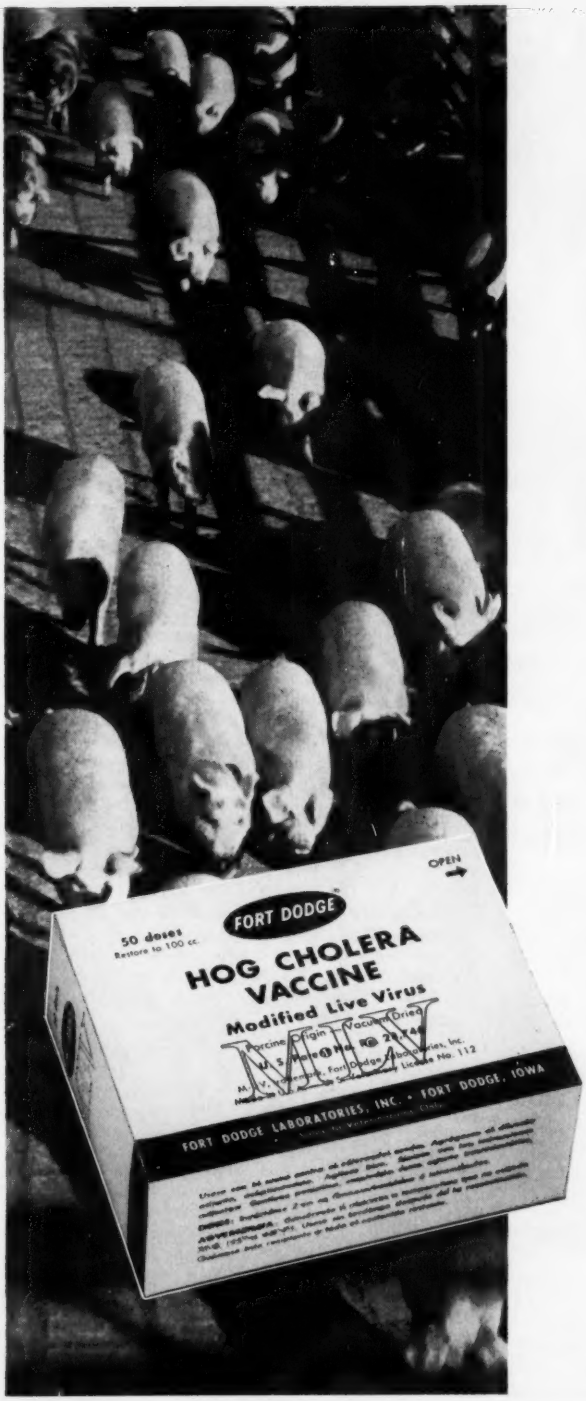

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Correspondence—*continued*

In response to your invitation to comment on the envelope now being used for the JOURNAL I should like to indicate that I believe the plastic to be wholly unsuitable. My JOURNAL now arrives in a semi-torn and dog-eared condition.

I strongly urge that you return immediately to the use of a heavy duty envelope for future mailing.

M.T.I.C.
Virginia

In viewing the condition of our AVMA JOURNALS which we just received in plastic envelopes, I would like to suggest that the plain brown envelopes be used again. The magazines delivered in brown envelopes were always in better shape than the ones just received by the freshman class here at Auburn University.

A.L.
Alabama

Just to make it official—I like the plastic covering for the JOURNAL, both of my issues have arrived in excellent condition.

N.W.P.
Connecticut

What is meant by your statement ". . . brown envelopes . . . unfortunately kept the JOURNAL too well concealed from the prospective reader." Is one supposed to read the JOURNAL through the plastic? I really can't see that this is an advantage or a good reason, especially if it costs $5,000.

The money saved by the coverless method should be earmarked for a specific project—such as sponsorship of an AVMA Fellowship. I can't see how anyone can complain if an effort is made to show that a useful saving has been made, but I believe I will be in agreement with them if the money is lost in a general fund.

H.C.M.
Georgia

You may be interested to know that the April 15 issue arrived today in good condition. It was raining, and delivery was by a letter carrier covering several miles on foot. The JOURNAL was dry and in good shape. The plastic envelopes is apparently a good way to mail it.

C.E.D.
New York

I have been very much interested in the experiments being made during the past several months in mailing the JOURNAL. I was agreeably surprised yesterday to receive my copy of the JOURNAL enclosed in the pliofilm bag. We have seen pliofilm and other similar plastic materials used in a great variety of ways in the meat-packing industry; however, this is the first time we have seen it used as a device for mailing magazines.

I was not too happy with my copies of the JOURNAL when they arrived rather "dog-eared" but this issue came through in fine shape. It will be interesting to know if this works out well from a practical standpoint.

C.H.P.
Washington, D.C.

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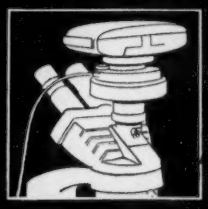

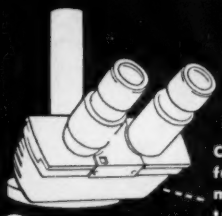

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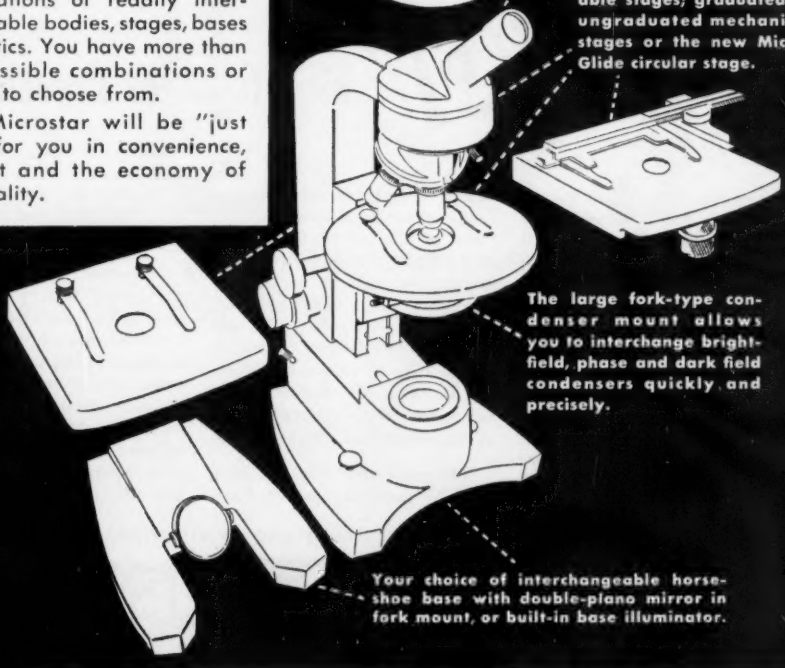

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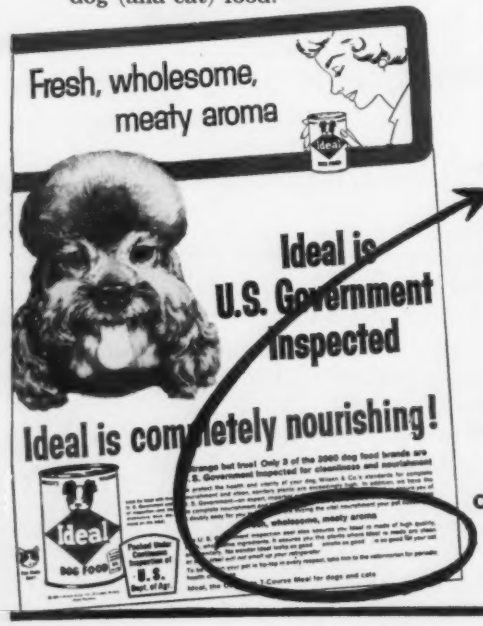

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news from Washington . . .

FROM THE AVMA WASHINGTON OFFICE
J. A. McCallam, VMD
Brig. Gen. USA (Ret.)

LEGISLATION

Food Additives Amendment Becomes Law

H. R. 3980, amending the transitional provisions of the Food Additives Amendment Act of 1958, became *P.L. 87-19* when signed by the President April 7, 1961 (see JOURNAL May 1, 1961, adv. p. 12.)

Senate Christens "Committee on Commerce"

Senate approved change in name of Committee on Interstate and Foreign Commerce to "*Committee on Commerce,*" pursuant to *S. Res. 117,* (Senate Report No. 146)
Kefauver Subcommittee of Senate Committee on Judiciary published a report of its activities on antitrust and monopoly for 1960. Included in contents (Senate Report No. 167) are results of hearings on drugs relating to price, use of generic names, impact on F.D.A., action A.M.A. and A.M.A. local societies, etc.

NEW BILLS

Drug Antitrust Act

S. 1552, Sen. Kefauver (D., Tenn.) and *H. R. 6245,* Rep. Celler (D., N.Y.)—Companion bills to amend and supplement the antitrust and food and drug laws relating to manufacture and distribution of drugs. This Sherman Act Amendment, cited as the "Drug Industry Antitrust Act," would curtail drug companies' liberties relative to patents; reject trade names in favor of generic names; expand F.D.A. authority to pass on efficacy of new drugs.

Drug Ad Regulation

H.R. 6471, Rep. Dingel (D., Mich.)—To amend Federal Trade Commission Act to provide for certain disclosures in prescription drug advertisements.
H.R. 6539, Rep. McFall (D., Calif.)—To amend Federal Trade Commission Act to prohibit any person, partnership, or corporation from disseminating advertisements falsely representing the prices at which commodities are offered for sale to be the wholesale prices of such commodities.

New Cabinet Post

S. 1688, Sen. Kefauver (D., Tenn.)—To establish a Department of Consumers in President's Cabinet to secure effective representation of the economic interest of consumers; to coordinate the administration of consumer services by transferring to such department certain functions of HEW, Labor, and other agencies. Into it would go F.D.A. of HEW; human nutrition research division of USDA, and sundry other units.

(Continued on adv. page 16)

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CORN BELT LABORATORIES, INC. THE GREGORY LABORATORY, INC.

Washington News—Continued

Aid to Education

H.R. 6483, Rep. (Mrs.) Green (D., Ore.)—To authorize assistance to public and other non-profit institutions of higher education in financing construction, rehabilitation, or improvement of needed academic and related facilities; to authorize scholarships for undergraduate study and special awards for academic excellence.

Research and Development

H.R. 6440, Rep. (Mrs.) Hansen (D., Wash.)—To provide for a method of payment of indirect costs of research and development contracted by the federal government (including grants) at universities, colleges, and other educational institutions.

Congressman Keogh and Gen. McCallam Discuss H. R. 10

Rep. Keogh, right (D., N. Y.) discusses *H.R. 10* with AVMA Washington representative. *H.R. 10,* a voluntary pension plan for the self-employed, was favorably reported out of House Ways and Means Committee on April 26. As of April 20, 31 members in House of Representatives have introduced bills designed to encourage the establishment of voluntary pension plans. The new sponsors are:
Democrats—McFall, Calif., 4138; Karth, Minn., 4608; *Boggs, La., 5145; Monagan, Conn., 5214; Steed, Okla., 5417; Inouye, Hawaii, 5630; *Burke, Mass., 5931; Hagen, Calif., 6090; Bass, Tenn., 6616; Flood, Pa., 6297; *Green, Pa., 6408;
Republicans—Cramer, Fla., 3956; Dooley, N. Y., 3976; *Utt, Calif., 5102; *Derounian, N. Y., 5345; Morse, Mass., 5364; Beerman, Neb., 5515; Teague, Calif., 6267; *Betts, Ohio, 6351; Stafford, Vt., 6379; Fulton, Pa., 6404; Judd, Minn., 6435.
* Member—Ways and Means Committee. (Listing of previous sponsors in House, see JOURNALS Feb. 15, 1961 adv. p. 10; March 1, 1961, adv. p. 18.)

ANNOUNCING

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in dairy cattle

A new approach to Diuretic Therapy

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One of the most troublesome problems encountered in dairy cattle practice is congestion of the mammary gland, either shortly before, or immediately following, parturition. This physiologic, noninfectious swelling—with its concurrent pain, often causing discomfort to the animal during the milking process—is frequently encountered in high-producing cows. Mammary edema is particularly bothersome in first-calf heifers. The onset of lactation places a heavy strain on the udder, resulting, in some cases, in a premature breakdown of the udder attachments, proneness toward udder injury and difficult accommodations to the milking machine, or premature development of a "seedy" udder. It may also lead to lost revenue as a result of reduced milk production.

Diuresis aids in reducing edema

The removal of excess fluid from edematous tissues is now possible through the use of DIURIL Boluses. This exceptionally potent, orally effective diuretic, by relieving udder edema, facilitates handling of high-producing cows *and* heifers during the onset of lactation. By removing abnormal stress on mammary attachments, DIURIL may also help preserve the contour of the udder and prolong the productive life of quality animals—when used as an adjunct to good management.

Other edematous conditions that can profit from the saluretic action of DIURIL Boluses include swelling of the ventral portions of the body, often without apparent cause, and edema connected with certain general infections or allergic-like reactions.

DIURIL, a well-tolerated, potent, saluretic agent in Bolus (or Tablet) form, demonstrates a high therapeutic index and low inherent toxicity. It can be administered even in the presence of severe cardiac, renal or hepatic diseases. The onset of diuretic action, following oral administration, is prompt *and may continue for 24 hours.* No untoward reactions or side effects have been noted in cattle—even with extremely large doses.

DIURIL Boluses, 2-Gm. each, are available in packages of 5 and 50. DIURIL is unique...*it is the only form of chlorothiazide available to the profession.* For information on use-directions, pharmacology, contraindications, dosage and administration, be sure to read the package insert.

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NOTE: Milk taken from dairy animals during treatment, and for 3 days after the latest treatment, must not be used for food.

Clinical reports demonstrate the effectiveness of DIURIL Boluses in relief of Mammary Edema

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Clinical Indications

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Precautions

DIURIL is a potent compound in its influence on electrolyte excretion and, as a result, dosage and administration must be individualized. As with other potent diuretics, the patient should be regularly and carefully observed for the early signs of fluid and electrolyte imbalance and appropriate measures taken to prevent or correct such imbalance if it occurs. The early clinical signs and symptoms of fluid and electrolyte imbalances, whatever the cause, are increased thirst, weakness, lethargy, drowsiness or restlessness, fatigue, oliguria, gastrointestinal disturbances and tachycardia.

NOTE: Milk taken from dairy animals during treatment, and for 3 days after the latest treatment, must not be used for food.

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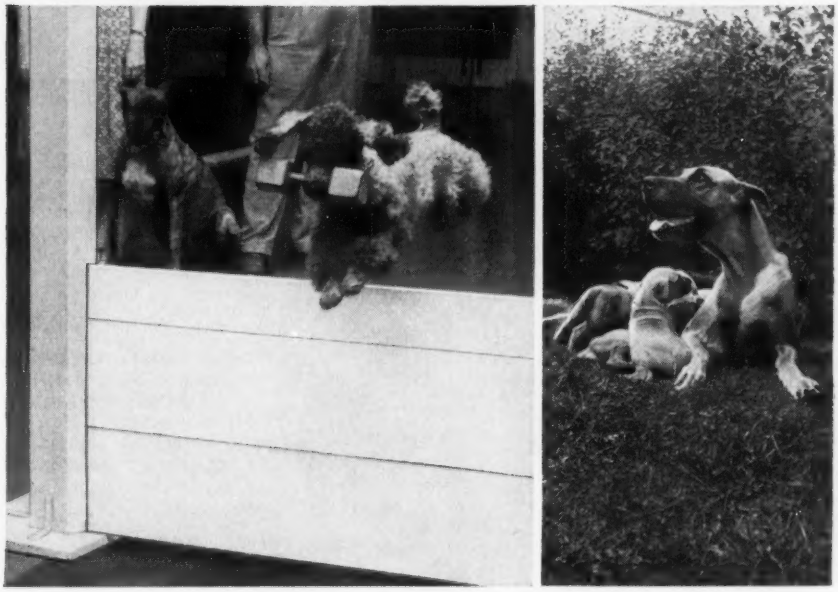

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Fluid and Electrolyte Therapy for Monkeys

Donald E. Pickering, M.D., and Timothy T-H Kao, B.S

THE PREVENTION and proper management of dehydration and electrolyte disturbances can reduce morbidity and mortality attending the transporting and conditioning of laboratory primates and other animals.

This report describes studies in which mulatta macaque monkeys *(Macaca mulatta)* were maintained for relatively long periods on an oral solution which has been designed to meet scientific requirements and which is economical and easily prepared. The solution supplies adequate calories and optimal quantities of water and electrolytes and also includes an antibiotic. Presumably, it will fully maintain animals being transported long distances, being conditioned in the laboratory, or both.

Dehydration and serious electrolyte disturbances in animals are prevented and simple diarrhea is treated prophylactically by adding essential maintenance electrolytes in the form of a concentrate* to the average water requirements per 100 calories and then providing the dilute solution for *ad libitum* oral consumption. The average maintenance requirements for essential electrolytes in monkeys and other small animals have been described previously.[3] These requirements per 100 calories are sodium ion, 2.5 mEq.; potassium ion, 2.2 mEq.; and chloride ion, 1.8 mEq.

In the usual laboratory situation, this electrolyte concentrate, when added to a 5 or 10% carbohydrate source, will provide a solution with adequate water and electrolytes and protein-sparing calories. Prolonged periods of use are usually required in transporting and conditioning animals; therefore, additional calories were provided in solutions used in the present studies by the addition of distilled grain spirits (ethyl alcohol, U.S.P.).

Materials and Methods

Animals and Study Plan.—Seven adult and 8 adolescent healthy mulatta macaque monkeys were selected at random for these studies. The adults ranged in age from 5 to 10 years; the adolescents, from 2 to 3 years. All were maintained in an environment of nearly constant humidity and at room temperatures of 72 to 75 F. They were allotted to 4 groups:

A) This was a group of 3 adult monkeys in

From the Pediatric Endocrine-Metabolic Laboratories, University of Oregon Medical School, Portland, and the Oregon Primate Research Center, P.O. Box 366, Beaverton.

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*Vetrad-O-Complete, Don Hall Laboratories, 1935 N. Argyle, Portland, Ore.

TABLE 1—Composition of Solutions

Material	Quantity	Water	Calories	Na^+	K^+	Cl^-	$PO^{\equiv}$	Lactate
SOLUTION A:								
Ethyl Alcohol, 95% (grain spirits)	20 cc.	.....	140	.....	.....	.....	.....	.....
Sugar (sucrose)	50 gm.	.....	200	.....	.....	.....	.....	.....
Electrolyte concentrate*	15 cc.	.....	.....	37.5	33.0	27.0	4.5	40.5
Tetracycline	50 mg.	.....	.....	.....	.....	.....	.....	.....
Water, sufficient to make	....	1,000 cc.	.....	.....	.....	.....	.....	.....
Total	....	1,000 cc.	340	37.5	33.0	27.0	4.5	40.5
SOLUTION B: Same as solution A except that 10 cc. of the electrolyte concentrate was used in place of 15 cc.								
Total	....	1,000 cc.	340	25.0	22.0	18.0	3.0	27.0

*Vetrad M-Complete, Don Hall Laboratories, Portland, Ore.

which all oral feeding was withheld for 8 to 10 days, after which they were treated with the solution for 2 days.

B) In this group of adult monkeys, all oral feeding was withheld for 3 to 4 days following which they were given the solution through 12 days.

C) This group included 4 adolescent monkeys which were given the solution through 10 days.

D) This group of 4 adolescent monkeys was given the alternate solution, B, through 10 days.

Monkeys in group C were caged in pairs; all others were individually caged. All monkeys were examined daily and weighed every other day.

Serum chemistries were determined at the outset and at intervals during the study. Determinations performed included serum sodium,[3] serum potassium,[3] serum chloride,[5] serum phosphorus,[7] serum calcium,[6] and hemoglobin.[2]*

Treatment.—The solutions used were prepared daily and kept before the monkeys on an *ad libitum* basis (Table 1).

Results and Discussion

It is well known that the economy of the total body water is closely reflected by an accurate estimate of body weight. Data pertaining to the daily intake of the solutions and the changes occurring in body weight throughout the study period in the treated monkeys and during the period in which therapy was withheld in the untreated monkeys are presented (Table 2).

Most monkeys required 1 to 2 days to adapt to the solution; this seemed related to the presence of the antibiotic in the solutions. An exceedingly palatable solution results when the oral electrolyte concentrate alone is added to a 5 or 10% carbohydrate source in proper amounts; we have consistently observed that monkeys prefer it to water.

By comparing results obtained in any treated group with those of group A, it is clearly shown that the treated monkeys maintained an adequate amount of total body water and protected their tissue composition during therapy.

Clinically, the treated monkeys had no modification from their normal vitality, and there were no signs suggesting a disturbance of their water and electrolyte metabolism. In striking contrast, the monkeys from which therapy was withheld gradually became dehydrated and lethargic and, finally, developed many characteristics of unhealthy members of the average lot of freshly imported stock.

The ability of the solutions to provide an optimal intake of essential electrolytes was further validated by serial chemical determinations (Table 3).

It has been previously established that maintenance electrolyte requirements in adult animals are optimally provided when they are given a dilute solution containing 12 to 15 cc. of the oral electrolyte concentrate per liter of water, whereas 10 to 12 cc. per liter more closely parallels the requirements of adolescent animals.[3] The reason for evaluating 2 solutions in the adolescent group was to determine the tolerance of the adolescent to the less dilute solution used on the adults. This was considered important since use of one solution for all age groups would simplify management in the field.

There is some basis for preference of the more dilute solution for adolescent animals; however, use of either solution is probably satisfactory (Tables 2 and 3).

All treated monkeys maintained essentially normal electrolyte values, whereas

*Most determinations were performed by modifications of the methods cited.

TABLE 2—Body Weight and Solution Intake Data for Macaque Monkeys

Group	Animal No.	Measurement (weight in kg.; intake in cc.)	Day of Study 0	1	2	3	4	5	6	7	8	9	10
A	1	Weight	7.0	....*	6.8	....	6.4	....	6.2	....	6.0	....	....
		Intake	....*	....	....	....	....	....	....	....	....	....	....
	2	Weight	5.4	....	5.0	....	4.6	....	4.2	....	4.1	....	....
		Intake	....	....	....	....	....	....	....	....	....	....	....
	3	Weight	9.7	....	9.3	....	8.9	....	8.5	....	8.5	....	....
		Intake	....	....	....	....	....	....	....	....	....	....	....
B	4	Weight	5.0	....	4.6	....	4.4	....	4.0	....	4.4	....	4.4
		Intake	....	0	0	0	0	0	400.0	200	400.0	600.0	700.0
	5	Weight	5.3	....	5.0	....	4.7	....	4.9	....	4.9	....	4.7
		Intake	....	0	0	0	0	500	900.0	1,500	900.0	800	700.0
	6	Weight	4.5	....	4.3	....	4.2	....	4.2	....	4.3	....	4.2
		Intake	....	0	0	0	500.0	500	1,000.0	500	500.0	1,000	700.0
	7	Weight	5.0	....	4.9	....	4.6	....	4.6	....	4.7	....	4.8
		Intake	....	0	0	0	600.0	600	1,200.0	400	700.0	1,200	800.0
C	8	Weight	5.1	....	5.0	....	5.1	....	5.0	....	4.7	....	4.7
		Intake	....	0	500.0	1,000.0	600.0	800	750.0	500	350.0	500	300.0
	9	Weight	3.4	....	3.2	....	3.4	....	3.1	....	3.1	....	3.0
		Intake	....	0	500.0	1,000.0	600.0	800	750.0	500	350.0	500	300.0
	10	Weight	3.3	....	3.0	....	3.3	....	3.1	....	2.9	....	2.9
		Intake	....	0	0	1,000.0	400.0	500	700.0	500	750.0	500	250.0
	11	Weight	3.0	....	2.9	....	2.9	....	2.9	....	2.6	....	2.7
		Intake	....	0	0	1,000.0	650.0	500	700.0	750	600.0	500	250.0
D	12	Weight	5.2	....	4.8	....	5.1	....	5.0	....	4.8	....	4.7
		Intake	....	400	0	300.0	750.0	750	750.0	1,000	500.0	250	400.0
	13	Weight	5.6	....	5.2	....	5.6	....	5.5	....	5.3	....	5.2
		Intake	....	0	400.0	500.0	800.0	700	750.0	800	500.0	250	300.0
	14	Weight	2.9	....	2.9	....	2.9	....	2.8	....	2.9	....	2.8
		Intake	....	500	0	500.0	750.0	1,000	1,000.0	1,000	1,000.0	1,000	600.0
	15	Weight	2.6	....	2.6	....	2.6	....	2.5	....	2.4	....	2.4
		Intake	....	500	500.0	500.0	1,150.0	1,000	1,400.0	1,000	1,000.0	1,000	750.0

*....=no measurement made on that day or no solution offered.

each untreated monkey had severe hypernatremia. Their clinical status was typical of this pernicious state (Table 3).

In man, hypernatremia becomes symptomatic when the serum concentration of sodium ion exceeds 160 mEq. per liter.[4] In the present study, it was manifest by the 4th to 6th day and was characterized by the following typical signs: (1) weight loss in excess of apparent dehydration—

TABLE 3—Serum Chemistry Data of Monkeys

Group	Monkey No.	Day of study 0 Na+*	K+	Cl−	Hgb.	Ca++	P	8 Na+	K+	Cl−	Hgb.	Ca++	P	10 Na+	K+	Cl−	Hgb.	Ca++	P
A	1	142	4.24	106	13.0	11.3	4.84	177	4.86	119	14.8	12.9	5.96	....	....	....	....	....	....
	2	144	4.66	104	12.8	10.8	4.82	174	5.22	129	15.3	13.1	6.05	....	....	....	....	....	....
	3	145	3.98	102	16.2	11.2	3.81	164	4.50	120	16.7	11.8	5.21	....	....	....	....	....	....
B	4	149	4.68	102	12.2	10.6	3.34	149	4.15	106	13.2	10.5	3.59	146	4.37	102	12.8	10.8	3.31
	5	143	4.46	102	13.3	10.5	3.24	154	4.57	106	13.6	10.5	4.52	150	4.33	106	13.7	10.9	4.19
	6	134	4.23	108	14.0	11.3	5.75	151	5.58	106	15.6	11.2	5.64	151	4.75	106	13.5	10.8	4.76
	7	142	3.74	103	13.0	9.5	4.12	146	4.92	107	13.0	8.8	3.77	145	4.09	109	12.9	10.3	4.57
C	8	148	5.03	108	14.7	13.2	7.40	151	5.04	108	15.5	13.0	7.07	153	4.73	108	14.1	13.3	6.86
	9	147	4.42	108	13.5	11.3	6.88	148	4.96	105	14.2	11.7	6.57	150	4.95	107	14.6	11.8	6.65
	10	139	3.38	109	14.8	10.8	5.88	148	5.80	106	14.1	11.1	6.65	142	6.14	107	13.6	11.0	7.14
	11	136	4.59	103	14.0	10.8	6.96	154	5.58	103	15.3	11.1	5.94	155	6.17	105	15.4	11.5	6.37
D	12	152	4.23	108	12.4	12.2	4.82	147	5.21	106	12.8	12.7	5.21	151	4.96	105	13.6	12.9	5.53
	13	153	4.60	113	13.0	11.5	4.92	156	4.84	109	13.5	11.9	5.35	153	4.90	108	13.1	12.1	5.48
	14	147	4.50	108	14.4	12.6	6.20	148	4.86	107	15.2	12.9	7.00	148	4.84	105	14.2	13.0	7.48
	15	143	4.50	109	15.5	12.8	7.09	142	4.52	105	16.2	13.3	7.70	149	5.04	108	14.5	13.2	7.74

*Values for Na^+, K^+, and Cl^- expressed in mEq/liter; hemoglobin expressed as Gm./100 ml.; values for Ca^{++} and P expressed in mg./100 ml.

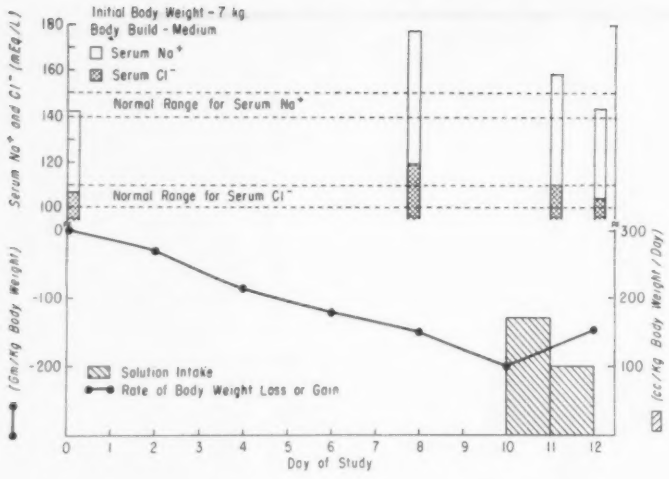

Fig. 1—Information on the development and treatment of hypernatremic dehydration in monkey 1.

e.g., with little or no evidence of loss of extracellular volume; (2) dry, rubbery, or doughy skin; and (3) neurologic changes —lethargy, irritability, altered tendon reflexes, muscular rigidity, convulsions, and finally apnea.

The ability of the untreated monkeys to maintain relatively normal serum calcium and phosphorus values in the face of severe hypernatremia is of considerable interest and reflects the rate with which the latter state developed.

Treatment of Dehydration and Hypernatremia.—The severe state of dehydration and hypernatremia occurring in monkeys in group A was optimally treated by the oral route using the same maintenance solution prepared for prevention of this malady.

The graphs (Fig. 1-3) present the significant data relating to development and treatment of hypernatremic dehydration.

Each monkey voluntarily ingested sufficient solution to return the serum sodium and chloride values to near normal levels by 48 hours of therapy; moreover, this was associated with adequate hydration as indicated by the change in body weight and

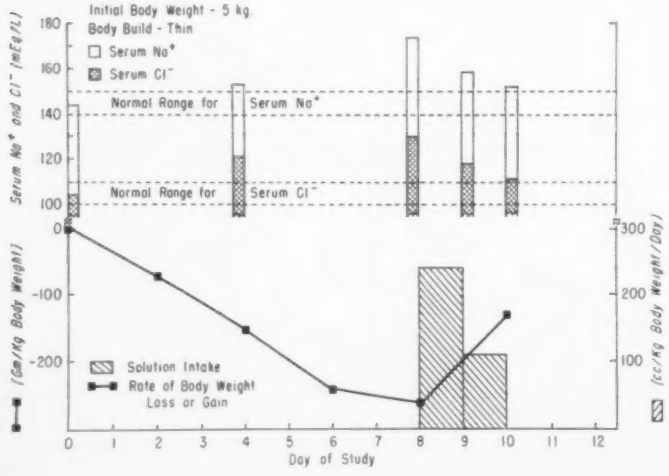

Fig. 2—Information on the development and treatment of hypernatremic dehydration in monkey 2.

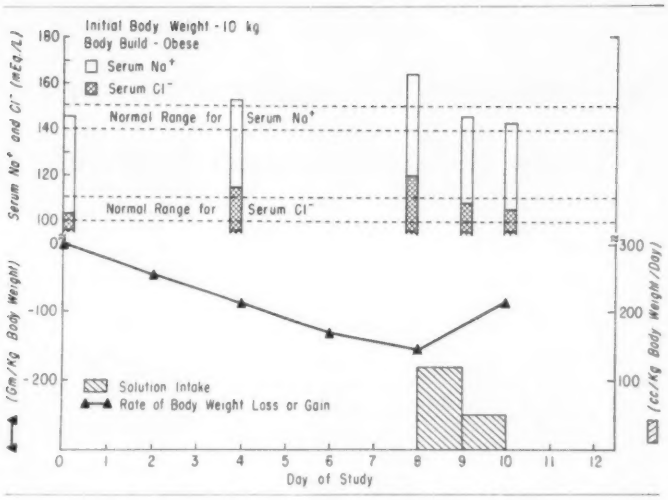

Fig. 3—Information on the development and treatment of hypernatremic dehydration in monkey 3.

the improved clinical state of the monkeys. In treating hypernatremia of the severity seen in these monkeys, the rate of correction should not greatly exceed that demonstrated in the present studies.

Summary

1) The daily provision of water and electrolyte requirements by use of an oral solution which also contained adequate calories was studied in adult and adolescent mulatta macaque monkeys. The solution was prepared by mixing water, an electrolyte concentrate, an antibiotic agent, and caloric sources, so that it could be adapted for use over relatively long periods in transporting and conditioning monkeys and other animals.

2) Three groups of adult and adolescent monkeys were given the solution *per os* and *ad libitum* for 12 and 10 days, respectively, and developed no clinical evidence of disturbed water and electrolyte metabolism during the study. There was minimal weight loss and persistence of normal serum sodium, potassium, chloride, and hemoglobin values.

3) Another group of adult monkeys was given neither food nor drink for 8 to 10 days. These monkeys developed severe hypernatremic dehydration within 6 to 8 days; this was associated with typical signs of the disorder and pronounced changes in serum concentrations of sodium, chloride, and potassium.

4) Hypernatremic dehydration was optimally treated using the same oral solution as was used in maintaining the other groups of monkeys. Chemical changes attending the disorder were reversed at an optimal rate following institution of such therapy.

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Epidemiology of Leptospirosis in Iowa— A Study of Sporadic and Epidemic Cases

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EUROPEAN reports, based on many years' experience with leptospirosis due to *Leptospira pomona*, have called attention to its public health significance.[1] Although the disease is recognized in the United States, its true public health significance has not been determined.[11] A survey[2] of Iowa cattle in 1957 indicated that in 7.4% of herds there was evidence of *L. pomona* infection. A recent report[8] on the prevalence of leptospirosis in swine indicated that approximately 10.0% of Iowa swine have demonstrable *L. pomona* antibodies.

Because of the large number of cattle and swine and the associated significant amount of leptospirosis in Iowa, epidemiologic studies were made to determine the prevalence of *L. pomona* infection in man. Instances of subclinical and acute human leptospirosis were documented.

Materials and Methods

Serologic prevalence studies were begun in 1958. All human blood specimens submitted to the Iowa State Hygienic Laboratory for diagnostic agglutination tests (in the main, brucellosis testing) were screen-tested for leptospirosis by the Stoenner macroscopic plate agglutination test[12] at a 1:2 dilution. Positive specimens were titered to an end point (starting at 1:10 and using doubling dilutions to end point, *i.e.*, 1:10, 1:20, 1:40, etc.) by a modification[14] of the Freeman[5] drop method. Commercially prepared antigens* of the *L. pomona, Leptospira icterohaemorrhagiae,* and *Leptospira canicola* serotypes were used. Specimens found to be positive for leptospirosis were identified, the attending physician alerted, and a detailed epidemiologic case investigation conducted.

Such investigations included an interview with the patient to obtain a complete occupational and environmental history. Clinical signs and symptoms were confirmed and animal contacts investigated. Detailed serologic and isolation studies were conducted on the patient and all suspected contact animals. All positive blood specimens were tested with the following research antigens.** *L. pomona, L. icterohaemorrhagiae, L. canicola, L. autumnalis, L. sejroe, L. grippotyphosa, L. ballum, L. bataviae, L. pyrogenes, L. hyos, L. australis,* A, and *L. hebdomadis.*

Isolation studies were conducted on human and animal urine specimens using Fletcher's medium. The inoculum was prepared from urine by making immediate serial tenfold dilutions from 1:10 to 1:1,000,000 using sterile Sorensen's buffered saline solution. Final isolation attempts were made by the Veterinary Public Health Laboratory Unit, Communicable Disease Center, Chamblee, Ga. Part of the animal urine specimens were examined by the fluorescent antibody technique at the Agricultural Experiment Stations, University of Florida, Gainesville.

Sporadic Infections

Forty-two persons with sporadically occurring leptospirosis were investigated in

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This study was directed by R. A. Tjalma, D.V.M., formerly with the Institute of Agricultural Medicine.

The assistance of Dr. I. H. Borts and staff, Iowa State Hygienic Laboratory; M. M. Galton, chief, Leptospiral Research Unit; Drs. A. Nahmias and R. D. Zinn, Communicable Disease Center, U.S. Public Health Service; Dr. F. D. White, University of Florida; the many Iowa medical and veterinary practitioners; and members of the Institute staff is gratefully acknowledged.

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*Prepared by Fort Dodge Laboratories, Inc., Fort Dodge, Iowa. Part of the antigen used in this study was supplied through the courtesy of Fort Dodge Laboratories.

**Supplied by the Veterinary Public Health Laboratory Unit, Communicable Disease Center, Chamblee, Ga.

TABLE 1—Leptospirosis in Iowa—Occupation and Implicated Infecting Serotype of 42 Sporadic Cases

Occupation	Implicated Serotype		
	L. pomona	L. ictero.	Unknown
Farmer*	19	....	....
Abattoir employee	18	....	1
Veterinarian	3	....	....
Bartender	....	1	....

*Includes 1 factory worker and 3 students engaged in animal farming.

detail. Compatible clinical histories and supporting serologic results were obtained in all instances (these data are to be summarized for publication elsewhere).

Persons are listed by occupation and implicated infecting serotype (Table 1). Infection in all but 2 appeared to have been occupationally connected.

Of the 19 farm-connected cases, 14 appeared to have been associated with exposure at home to cattle, swine, or both infected with *L. pomona*. In addition to clinical evidence of animal infection, serologic evidence was obtained in 9 instances. *Leptospira pomona* was isolated from the urine of 2 cattle from one farm. The remaining 5 persons appeared to have been associated with incidental exposures.

Seasonal and occupational distribution of the 42 persons are given (Fig. 2). Farm cases reached a peak during the fall farrowing season. Contact with aborted material occurred in several of the 14 exposures at home. The 3 veterinarians each gave evidence of many exposures to cattle and swine with clinical and serologic evidence of *L. pomona* infection.

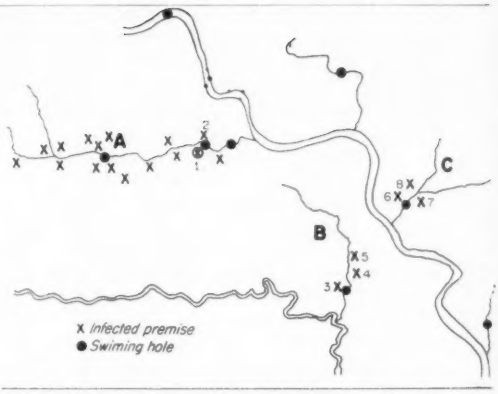

Fig. 1—Map of area where epidemic of leptospirosis due to *L. pomona* occurred. A, B, and C indicate the major streams involved.

The 18 abattoir employees probably were exposed occasionally to infected cattle and swine because, for one reason, their principal duty was removal of the genitourinary tracts.

One instance of *L. icterohaemorrhagiae* infection was observed in a person exposed to rat-contaminated surface water.

Leptospirosis Epidemic

In the fall of 1959, a detailed investigation of what initially appeared to be a spo-

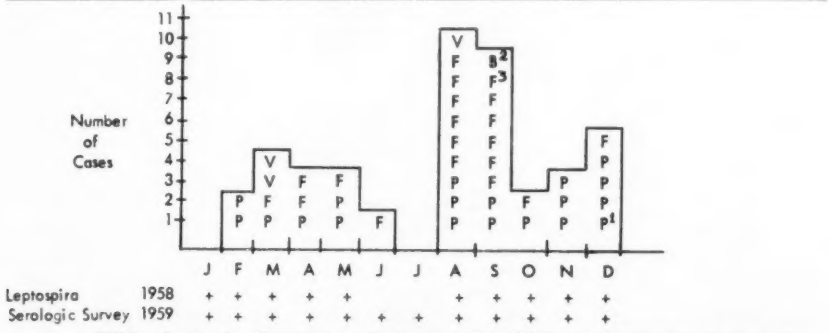
Number of Cases
J F M A M J J A S O N D
Leptospira Serologic Survey 1958 1959
CODE: P = Packing Plant Worker; F = Farmer or Farm Child; V = Veterinarian; B = Bartender
(1) Infecting Serotype Unknown; (2) Probable L. Ictero Infection; (3) Factory Worker, lives on hog farm. L. pomona Implicated in 40 cases.

Fig. 2—Seasonal and occupational distribution of 42 sporadic cases of leptospirosis in persons in Iowa.

radic occurrence of infection due to *L. pomona* yielded information leading to its detection in 39 other persons. The clinical and serologic findings confirmed the diagnosis of leptospirosis due to *L. pomona*. In addition, *L. pomona* was isolated from the urine of 2 patients. These are believed to be the 3rd and 4th times that isolation of *L. pomona* from man was recorded in the United States. Swimming in contaminated water was the probable source of infection. Detailed familial studies indicated that the possibility of man-to-man transmission was remote. Water analyses revealed water temperature and pH levels conducive to viability of leptospires. The watershed involved is shown (Fig. 1). Contaminated waters of 6 streams were situated in a manner that suggested independent stream contamination.

Seven area veterinarians were contacted for information regarding *L. pomoma* infection in domestic animals in the geographic area involved and livestock with direct access to the streams. By serologically testing cattle and swine herds in the area, evidence of leptospiral infection in many of the animals was obtained; clinical histories compatible with serologic findings were obtained in many instances.

Stream A (Fig. 1) was studied in detail. In the main, animal husbandry methods practiced in the epidemic area limited direct creek exposure to cattle. Although ample evidence of *L. pomona* infection in swine existed, infection in cattle was the target of most of the investigational work. On the map (Fig. 1) stream A and infected premises (x) are represented. A total of 16 herds were studied, and a positive serologic reaction was obtained in 78 of the 153 (13 herds) cattle tested. Clinical verification of the diagnosis was made in the remaining 3 herds. Clinical evidence of infection was observed in 11 of the 16 herds. Detailed studies, including urine isolation attempts, were conducted on 2 herds pastured immediately above and at the site of the swimming hole which was responsible for the majority of infections in persons. Herd 1 was composed of beef cattle and herd 2 of dairy cattle. Results of serologic and isolation studies are shown (Table 2). Herd 1 had a clinical history compatible with serologic findings.

Serologic and isolation studies were conducted on 3 dairy herds along stream B (Table 3). Herd 4 had a clinical history compatible with serologic findings. Similarly, 3 herds along stream C were studied (Fig. 1 and Table 4). Clinical signs were not evident in any of these cattle.

Discussion

Early in the course of leptospirosis, leptospires are blood-borne and consequently disseminated throughout the animal's body.[4] The organism has been recovered from the

TABLE 2—Results of Serologic and Isolation Studies of Leptospirosis in Herds 1 and 2, Pastured Along Stream A

Cow identification	Serum Titer			Isolation results
	L. pomona	L. ictero.	L. canicola	
Herd 1				
1	Neg.	Neg.	1:10	Neg.
2	1:20	1:20	1:40	Neg.
3	1:40	Neg.	1:10	Neg.
4	1:40	1:10	1:20	Neg.
5	1:40	1:160	1:640	Neg.
6	1:80	1:20	1:40	Pos. for L. pomona*
7	1:320	1:10	1:20	Neg.
8	1:320	1:20	1:20	Pos. for L. pomona*
9	1:2,560	1:160	1:40	Neg.
10	1:5,120	1:320	Neg.	Neg.
(Calf) 1	Neg.	Neg.	Neg.	Not done
(Calf) 2	Neg.	Neg.	Neg.	Not done
Herd 2				
1	1:20	Neg.	1:10	Neg
2	1:10	Neg.	1:20	Neg.
3	1:40	1:10	1:40	Neg.
4	1:20	1:10	1:10	Neg.
5	1:160	1:40	1:80	Neg.

*Also positive for leptospires by the fluorescent antibody technique.

TABLE 3—Results of Serologic and Isolation Studies of Leptospirosis in Herds 3, 4, and 5, Pastured Along Stream B

Cow identification	Serum titer			Isolation results
	L. pomona	L. ictero.	L. canicola	
Herd 3				
1	1:80	1:10	1:10	Neg.
2	1:10	Neg.	Neg.	Neg.
3	1:160	1:10	1:20	Neg.
4	1:2,560	1:80	1:20	Neg.
5	1:1,280	1:160	1:40	Neg.
6	Neg.	Neg.	Neg.	Neg.
7	1:320	1:10	1:10	Neg.
8	1:80	Neg.	1:10	Neg.
Herd 4				
1	1:2,560	1:80	Neg.	Neg.
2	1:80	1:10	1:20	Neg.
3	1:10	1:10	1:20	Neg.
4	1:640	1:10	1:40	Neg.
Herd 5				
1	Neg.	1:2	1:10	Not done
2	Neg.	Neg.	1:10	Not done
3	Neg.	Neg.	1:10	Not done
4-12	Neg.	Neg.	Neg.	Not done

aborted fetuses of both cattle and swine.[3] Following apparent clinical recovery, cattle may have leptospiruria as long as 3 months after infection with *L. pomona*, and swine may remain carriers for 6 months.[10]

Pathogenic leptospiral serotypes multiply mainly in the tissues of animals. Outside of the body, pathogenic serotypes propagate poorly and tend to die at a rate reflecting environmental conditions.[1] Available moisture, pH, and temperature are some of the more important environmental factors. Pathogenic leptospires will not survive in a dry atmosphere.[13] Leptospires persist in damp soil of a favorable pH and temperature for 3 to 5 days (optimum conditions: pH of 7.4 and temperature of 25 to 30 C.). Temperature conditions and pH above and below the optimum are detrimental to survival.[9] The organisms remain viable for 10 days to several weeks in contaminated natural waters where the pH and temperature are favorable.[6] The organisms are sensitive to the action of acids and persist for short periods in acid body

TABLE 4—Results of Serologic and Isolation Studies of Leptospirosis in Herds 6, 7, and 8, Pastured Along Stream C

Cow identification	Serum titer			Isolation results
	L. pomona	L. ictero.	L. canicola	
Herd 6				
1	1:20	Neg.	1:10	Not done
2	1:10	Neg.	1:10	Not done
3	Neg.	Neg.	1:2	Not done
4	1:1,280	1:20	1:40	Neg.
Herd 7				
1	1:160	1:10	1:40	Neg.
2	1:2	1:2	1:10	Not done
3	1:20	Neg.	1:10	Not done
4	Neg.	Neg.	1:2	Not done
5	1:2	Neg.	1:2	Not done
6	1:10	1:10	1:10	Not done
7	1:20	Neg.	1:20	Not done
Herd 8				
1	1:10	Neg.	1:20	Not done
2	Neg.	Neg.	1:2	Not done
3	Neg.	Neg.	1:2	Not done
4	Neg.	Neg.	1:10	Not done
5	1:20	1:20	1:40	Not done

wastes such as urine.[1] Undiluted cow's milk is leptospirocidal by lysis.[7]

Direct contact with infected urine or urine-contaminated fomites is the usual mode of infection. However, aborted fetuses and associated vaginal dejecta along with contaminated surface waters are also important. The skin is probably the most common portal of entry; the organisms enter through cuts, abrasions, bites, or sodden surfaces. However, the mucous membranes of the eyes, mouth, and nasopharynx are also portals of entry. The chance of man-to-man transmission is considered remote due to present-day standards of sanitation and to natural friability of the organism in an acidic environment.[1]

The hazard inherent in veterinary contact with cattle and swine infected with *L. pomona* needs emphasis. In addition, other individuals working with infected animals may be exposed to a similar hazard. If consulted, the veterinarian should alert clients with farm ponds and small streams to the fact that the combined access of animals and man to a common body of water represents a potential public health hazard.

Summary

1) Epidemiologic studies were conducted on 42 sporadic and 40 epidemic cases of leptospirosis in man.

2) Presumptive evidence indicated that all but 2 were due to *Leptospira pomona* infection.

3) Exposure to infected animal material was documented in the majority of cases.

4) *Leptospira pomona* was isolated from the urine of 2 persons and 4 cattle during the course of the study. As far as we can determine, there have been 2 previous isolations from man.

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Added Fats Improve Calf Gains

Fats are essential elements in milk replacement formulas for calves. In general, animal fats are more successfully utilized than vegetable oils, although hydrogenated vegetable oils have given satisfactory results. In one study, 10% of added fat in the replacer ration resulted in calves gaining weight 90% faster than on rations containing no added fat.—*Util. of Fats in Poultry and Other Livestock Feeds, Util. Res. Rep. No. 2, USDA (Aug., 1960): 30.*

Thelaziasis in Cats and Dogs—A Case Report

S. E. Knapp, Ph. D.; Robert B. Bailey, D.V.M.; Don E. Bailey, D.V.M.

THELAZIASIS was first reported in the United States in 1929 when ocular helminths were discovered in a dog.[1] These were identified and subsequently described in 1930 as *Thelazia californiensis*.[9] In 1938, a survey of canine thelaziasis in California indicated that the parasite was widely distributed in that state and was most heavily concentrated in wilderness regions.[2] In 1939, *T. californiensis* was reported in domestic cats in California.[3] Other published reports indicate that this parasite has been observed in man,[6] deer,[7] sheep,[10] black bears,[4] and coyotes.[5] Although most records for this parasite are from California, it has been reported from a deer in Nevada and a dog in Oregon.[8]

The purpose of this report is to cite several cases of thelaziasis in Oregon dogs and cats and to extend knowledge of the distribution of *T. californiensis* in the United States. The following 3 case histories were referred to a veterinary clinic in Roseburg, Ore. Nematodes removed from the eyes of each of these animals were submitted to the Department of Veterinary Medicine, Oregon State College, Corvallis, for identification.

Case Reports

Case 1.—In December, 1959, a male domestic cat 2 years old with a slight ocular discharge was brought to the clinic for treatment. The owner stated that she had seen something move across the cat's eye. On examination, a mild bilateral conjunctivitis was seen. A tranquilizer was administered and, on further examination, one nematode was found in each eye in the conjunctival sac near the fornix oculi. The worms were removed with forceps.

In August, 1960, the same cat was returned to the clinic, and 2 more worms were removed from the right eye. The cat was raised in Douglas County, Oregon, and had never been out of that area.

Case 2.—On Sept. 13, 1960, a male 1-year-old dog of mixed breeding was brought to the clinic with a history of an eye disorder for the past several weeks. Severe pustular conjunctivitis was observed, together with slight, bilateral corneal opacity. After administering a tranquilizer, 23 nematodes were removed from the eyes. As in the first case, this dog had no history of having been out of the county.

Case 3.—A male domestic cat 1½ years old was brought to the clinic on Sept. 14, 1960, with a pustular conjunctivitis of 2 weeks' duration. The cat was anoretic; on examination it was found to have acute panleukopenia. During the examination, 4 nematodes were removed from the right eye. The conjunctival sacs were not inflamed. This cat was obtained as a stray kitten and had no record of having been out of the county.

Other Reports

In conversations with 2 practitioners,* it was learned that eye worms have been observed on several different occasions in dogs although none of these specimens were positively identified. Furthermore, in 1946, 6 of these nematodes were found in a Boxer dog from Corvallis, Ore.** However, the origin of the dog was unknown.

Summary and Conclusions

Case histories of ocular thelaziasis in 2 cats and 1 dog are described. These were submitted to the same veterinary clinic within 9 months. None of these animals were known to have ever left the immediate vicinity of Roseburg, Ore., thus indicating that *Thelazia californiensis* is probably in-

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*C. C. Rosencrans of Cottage Grove, Ore., and W. J. Krebbs of Grants Pass, Ore.

**Specimens collected by Dr. J. W. Osebold, formerly with the Oregon State College Department of Veterinary Medicine, Corvallis, Ore.

digenous to this area. Also, 3 practitioners' reports indicate this parasite has been observed in other parts of Oregon.

No information regarding the intermediate host or vector of this parasite was available, although it has been reported to be transmitted by muscid flies in other parts of the world.

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Chlorpromazine Depression Not Serious

In an analysis of 34 hysterectomy operations on bitches with pyometra, it was found that systolic blood pressure was reduced to 100 mm. of Hg when chlorpromazine was given in addition to an anesthetic. When no chlorpromazine was used, the blood pressure decreased to only 130 mm. In an analysis involving 163 hysterectomy operations, in which approximately half of the bitches were given chlorpromazine, there was no difference in mortality up to the 5th day following the operation.—*Berl. u Münch. tierärztl. Wchnschr., 73, (Dec. 15, 1960): 474.*

Effect of Serotonin on Pancreatic Secretion in Dogs

Chronic total pancreatic fistulas were established in dogs, and the effects of serotonin (5-HT) and a serotonin precursor, 5-hydroxytryptophane (5-HTP), on external pancreatic secretion were determined.

When 5-HT was administered intravenously to fasting dogs, it induced a prompt fall in pancreatic juice flow which approached one-third of the fasting control flows. Pancreatic juice flow stimulated by food was similarly depressed by intravenous 5-HT; 5-HTP administered intravenously also depressed pancreatic juice flow, but the response to 5-HTP was slower and less pronounced than that to 5-HT.—*Surgery, 48, (Nov., 1960): 854.*

Intrathoracic Thyroid Gland in a Dog —A Case Report

Robert G. Geil, D.V.M.

DURING the routine microscopic examination of tissues from a clinically normal 40-lb. male dog of mixed breeding which had been used for cardiac surgical research, a structure resembling normal thyroid gland was found in the tunica adventitia at the base of the aorta (Fig. 1). The tissue had a follicular pattern formed by large, colloid-filled follicles lined by one or more layers of cuboidal epithelium. The structure of the aberrant thyroid tissue was exactly like that of the cervical thyroid gland which was histologically normal.

After the aberrant thyroid gland was observed in the tissue section, the formalin-fixed heart was carefully examined and, adjacent to the site from which the tissue specimen had been removed for histopathologic examination, a dark, raised body about 2 by 4 by 4 mm. was seen in the adventitia at the base of the aorta, approximately 1 cm. distal to the aortic valves.

Although, to the author's knowledge, there are no reports in the American literature of intrathoracic thyroid tissue in dogs, a German worker has reported intrapericardial secondary thyroid tissue in 47.5% of 400 dogs examined.[1] The predominant location of these aberrant structures was at the base of the aorta. In man, the intrathoracic location is an unusual site of aberrant thyroid tissue; ectopic thyroid tissue is most commonly found along the path of the embryonic thyroglossal duct from the base of the tongue to the normal cervical thyroid location. The origin of the intrathoracic thyroid tissue in man has been most often attributed to a down-

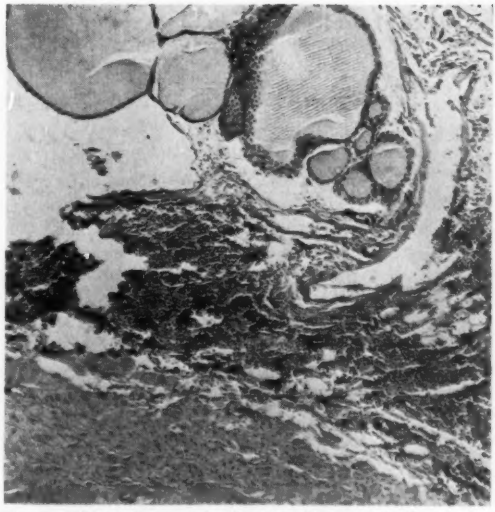

Fig. 1—Photomicrograph showing the ectopic thyroid tissue adjacent to the wall of the aorta. The extensive hemorrhage in the section was caused by the surgical research procedure. H & E stain; x 160.

growth of a goiter from the cervical region.[2]

In dogs, the reportedly frequent presence of intrapericardial thyroid has been explained by the caudad migration of thyroid primordium from the cervical region. In the early embryo, the thyroid primordium lies in the angle of the truncus arteriosus and the left 4th aortic arch. It is postulated that thyroid primordium is carried caudad with the left 4th aortic arch which becomes the permanent arch of the aorta.[1]

The European reports indicate that intrapericardial thyroid tissue is common; the reason for the absence of reports in the American literature may be because of the

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The author thanks Mr. William Hommel, Clinical Photography Service, Fitzsimons General Hospital, for the photomicrograph.

ease with which the condition can be overlooked in a routine necropsy. The presence of intrathoracic thyroid may have significance in a number of situations. Perhaps most important is the unpredictable effect the presence of ectopic thyroid tissue may have upon research involving extirpation of the thyroid gland in dogs. The possibility of a neoplastic change in intrathoracic thyroid tissue should be considered in dogs with "heart base tumors." In man, ectopic thyroid tissue is subject to neoplastic change.[2]

Summary

Ectopic thyroid tissue was found at the base of the aorta in a dog. Presence of such tissue may have a significant effect upon research involving extirpation of the thyroid gland.

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Synovial Cyst of the Olecranon Bursa of the Dog

A YOUNG, male terrier-type dog had a soft fluctuating mass at the point of the left elbow. The enlargement was subcutaneous, was not adherent to the skin, and was freely movable except at the olecranon. The skin covering the mass appeared normal. No signs of inflammation were detectable in the mass or in the skin covering it. A bacteriologically sterile, yellowish fluid,

Fig. 1 (above)—Lateral radiograph of left elbow of dog; air has been injected. The arrow indicates a large floating fibrous mass and 2 smaller ones.

Fig. 2 (right)—Histologic section of cyst wall and a villus, both composed of dense fibrous connective tissue.

which did not clot, was aspirated from the swollen area with a hypodermic needle. Without removing the needle, air was injected to distend the lesion to its former approximate size. Radiographs were then taken (Fig. 1).

The cyst was surgically removed and did not recur during a 5-week observation period. Recovery was uncomplicated.

On histopathologic examination,* there were villi projecting from the cyst wall, and free floating fibrous bodies suspended in the synovia (Fig. 1). The cyst wall, villi, and fibrous bodies were composed of fibrous connective tissue (Fig. 2).

The condition was diagnosed as a synovial cyst of the olecranon bursa. The lesion was probably the result of acute bursitis.—*Lionel F. Rubin, V.M.D., and Rex R. Every, D.V.M., National Institutes of Health, Bethesda, Md.*

*Histopathologic studies were made by Dr. Roy Kinard, National Institutes of Health, Bethesda, Md.

Islet Cell Tumor of the Bovine Pancreas

Carlos Hubinger Tokarnia, D.V.M.

TWO PRIMARY epithelial tumors occur in the pancreas; one is derived from the acinar and duct epithelium, and the other from the islets of Langerhans. Tumors of the islets of Langerhans, either adenomas or adenocarcinomas, are not rare in man. Most of the tumors of the islets of Langerhans attract attention because of hyperinsulinism and hypoglycemia resulting from their functional activity.[9,24,27,30]

Review of Literature

A few reports on the occurrence of tumors of the islets of Langerhans in animals appear in the literature and refer to the dog, cat, rat, mouse, and cow. The greatest number pertain to the dog. The first investigator[8] to observe the tumor in a dog, found the pancreas sown with nodules with metastases of the tumor to the heart, lungs, liver, and lymph nodes. On histopathologic examination of the tumor, there was an irregular proliferation of neoplastic cells, consisting of epithelial cells close to capillaries, indicating an endocrine function of the tissue. The author considered this a "langerhansian cancer."

Another case was described[26] in a female Pit Bull Terrier 12 years old. For 2 years, this dog had attacks of weakness, with lack of control of the muscles and, later, convulsions. These signs could be relieved immediately by oral administration of sugar. The sugar content of the blood was found to be 30 mg./100 ml. At necropsy, multiple nodules were found in the head of the pancreas—the largest having a diameter of 30 mm. with the histologic appearance of "tumors derived from the islands of Langerhans." The appearance of some of the nodules indicated that they were benign adenomatous growths, but at least 2 of the nodules had definite invasive properties characteristic of malignant growth.

Formalin-fixed and paraffin-embedded specimens from a male Boxer and a female St. Bernard were studied.[14] Only the Boxer had clinical signs of hypoglycemia; occassionally, during his last year of life, he had severe convulsive attacks, which were followed by pronounced weakness. At necropsy, a well-defined tumor the size of a hazel nut was found in the middle of the pancreas, with metastases in the liver. In the St. Bernard, a similarly well-circumscribed, pea-sized tumor was found in the pancreas. In both dogs, the author diagnosed insuloma, basing his diagnosis in histopathologic examination. When stained with Gomori's chrome-hematoxylin-phloxine, most of the tumor cells from both dogs had granulations similar to those of the *beta* cells of the pancreatic islands of normal dogs.

A tumor of the cells of the islands of Langerhans from a dog has been removed successfully.[28]

It has been said[4] that the usual cause of hyperinsulinism in the dog is a functioning islet cell adenoma, less commonly an islet cell carcinoma. The same author also stated that functioning islet cell tumors (principally adenomas) which produce hyperinsulinism are rare but may be seen in older dogs. A photomicrograph of a "functioning islet cell adenoma" of a dog with hyperinsulinism was included.

The syndrome has been reported in 3 dogs with functional adenomata and in another with a carcinoma.[29] In one dog, the condition was alleviated by surgery.

Three cases of "islet cell carcinoma" have been described[6] in dogs which, after a period of starvation or exercise, had signs associated with hypoglycemia (*i.e.* weakness, ataxia, and epileptiform convulsions). These signs could be relieved by the administration of glucose. Glucose concentrations in the blood were low. These 3 dogs were surgically treated, but all died. In these dogs, small primary tumors were found in the pancreas in the form of nodules with diameter of 5 to 30 mm. In each dog, there were metastases in the portal lymph nodes; 2 of them had metastases in the liver as well. Both in primary tumors and in their metastases, a dense stroma subdivided and encapsulated the neoplastic tissue; cytoplasmic granules were found in the tumor cells when stained according to Gomori's aldehyde-fuchsin technique for *beta* cell granules. In the brain of one dog, there were severe alterations consisting of edematous loosening of the cortical gray matter associated with varying degree of neuronal damage.

From the Section of Animal Pathology of the Instituto de Biologia Animal, Rio de Janeiro, Brazil.

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Four further pancreatic insulomas were seen; one in a Fox Terrier 9 years old; one in a Boxer 10 years old; one in a Doberman Pinscher 10 years old; and one in a Collie 7 years old. Only the one in the Doberman Pinscher had metastases; these were in a duodenal lymph node and in the liver.[18]

Recently one more nonmetastasing pancreatic insuloma in a Boxer, 8 years old was described.[12] Cytoplasmic granules tinctorially resembling those of *beta* cells were found in some tumor cells. This dog had been subject to episodes of unconsciousness for a year.

There are 3 reports of the occurrence of this type of tumor in the cat. In one, "langerhansian cancer" was diagnosed.[2] This type of tumor was found in a second cat[16] 3 years old which had been ill for some time and was euthanatized at the request of his owner. The tail of the pancreas was thick and like a small fist; there were adhesions to the liver which contained numerous metastases. The author observed that there was a histologic similarity of certain parts of the neoplasm to normal islands of Langerhans, and concluded that he was dealing with a langerhansian epithelioma. In addition to those 2 reports, a photomicrograph of an "adenoma of the islet cells of the pancreas" of a female Persian cat 10 years old appears in a pathology textbook.[27]

At necropsy of a female rat, which died at the age of 26 months, an "adenoma of the islands of Langerhans" was found as well as 3 adenomas of the mammary glands, 2 of which were recurrences of tumors removed earlier, and an adenoma of a hypertrophic pituitary, a hypertrophic pancreas, and a uterine fibroma. This rat had been used in experiments to establish a relationship between the functional activity of the mammary gland and mammary carcinoma in the rat. One case of insuloma in a male rat 2 years old has been described.[13] This rat had been castrated when 2 months old and later grafted with an ovary from his own mother. It died with a syndrome of generalized adiposity, especially severe in the region of the mammary glands. At necropsy, a small nodule was found in the mesentery, which proved to have the histologic features of an insuloma. This pancreatic tumor was associated with small adenomas of the thyroid glands and the pituitary gland.

An "islet adenoma of the pancreas" in a mouse, found accidentally at necropsy, has been described.[16] The tumor was approximately 1.5 mm. in diameter. Cells microscopically similar to those of the pancreatic islets were found, arranged in indistinctly outlined strands and clusters with scarce stroma which consisted almost entirely of capillary endothelium.

All observations on the occurrence of this tumor in cattle are from Italian authors; except for one,[3] they were all made at the Institute at Bolonga. The studies were all made on material from slaughterhouses and contained detailed macroscopic and microscopic descriptions. In the first description of this tumor in cattle,[21] one such tumor was found in the pancreas in the form of scattered nodules of grayish color peppered with red, or entirely red, and with metastases in the kidney. Based on histopathologic studies, the tumor was said to be a "primary epithelioma of the insular pancreas." A second observation was made in an ox 4 years old,[3] killed because of progressive loss of weight and a digestive disturbance. The head of the pancreas was replaced by connective tissue in which multiple nodules were embedded. Nodular metastases were present in the liver and the pancreatic and portal lymph nodes. Macroscopically, the nodules varied from grayish red to bright red, due to the large amount of blood they contained. The parenchyma was traversed in various directions by strands of connective tissue. Histopathologic studies revealed the endocrine appearance of the tumor. It was considered a "primary tumor of the insular pancreas."

Nine cases of primary epithelioma of the endocrine pancreas have been described.[29] According to one investigator,[29] this type of tumor can be characterized macroscopically by its rich vasculature, its multinodular character, the intense sclerotic perinodular reaction, its invasion into blood vessels, and frequent metastases, principally to the liver and lymph nodes. Histologically, it was characterized by the typical structure, which is made up of blood vessels lying between strands of epithelial cells, the similarity of epithelial formations to normal islets, both in cell structure and arrangement, and by the absence of lipids in the cytoplasm of the cells of the tumor. In studying a tumor which extended throughout the whole right part of the diaphragmatic peritoneum, another investigator[28] concluded that it was a "tumor derived from the insular pancreas." In another case[23] in which the insuloma involved the intrahepatic vena cava, it was mentioned that this is one of the most frequent neoplasms in the bovine species.

Case Report

On July 1, 1957, I was called to examine a cow 10 years old of no definite breed, in the Municipio de Serra Negra do Norte, in the State of Rio Grande do Norte. The cow was said to be suffering from "nerves having attacks." In these attacks, the cow would tremble, fall down, stiffen, and roll her eyes. They were said to be of short duration and, immediately after them, the cow would behave normally. They had started 3 months before and, in the beginning, were rare but, with the passing of time, they increased in frequency. During the last 14 days, the cow's condition had worsened; she was unable to rise, had contant attacks, and would eat only when feed was placed in her mouth. She had been coughing for some time.

Eighteen days previously, the cow's right horn had been perforated because the owner thought it might have "mal dos chifres"

(hollow-horn), a diagnosis frequently made by laymen, which has been shown to be based on erroneous observations.[29] Fourteen days after this procedure, a foul-smelling fluid began to ooze from the perforated horn. A year and a half before, both horns had been perforated similarly.

The physical examination was made with the cow lying on its right side. Surprisingly, its nutritional state was good. Body temperature was 37.4 C. (at 8:30 a.m.). In the right horn, there were 2 holes from which oozed a clear, foul-smelling fluid. During the examination, it was necessary to turn the cow over and, at that moment, she had one of the attacks described by the owner. The cow's body suddenly became rigid, and it stretched out its 4 stiffened limbs, turned its head backwards, and rolled its eyes. Rate of respiration was accelerated. The cow trembled slightly all over. Approximately 30 seconds after onset, all signs of the attack disappeared. Because of the extreme sensitivity of the cow, a more detailed examination could not be made, and no clinical diagnosis was reached. In the evening of the same day, in spite of the recommendation that a dose of 500 to 1,000 ml. of calcium gluconate be given, the owner would permit only 100 ml. to be administered because of the cost. The next morning the cow was dead.

Necropsy Findings.—Rigor mortis was complete. Upon opening the right horn and the right frontal sinus, a foul-smelling clear fluid was found. The right lung was dark red and firm; its cut surface was also dark red. The cardiac lobe contained many abscesses, ranging from 1 to 5 mm. in diameter and containing yellow pus. One abscess, approximately 2 cm. in diameter, was found in the liver. The abscess was well encapsulated and contained odorless, clear yellow pus.

Occupying almost the entire middle region and part of the right portion of the pancreas, there was an irregular mass, measuring approximately 10 by 7 by 4 cm. This mass (Fig. 1) had a multilobulated surface and was firm and pink except for a few areas which were dark red. On section, the neoplastic mass was seen to be composed of numerous, more or less round, nodules, varying in diameter from the limit of visibility up to 2.5 cm. and separated by strands of connective tissue 1 mm. thick (Fig. 2). In some parts the connective tissue between the nodules was more abundant.

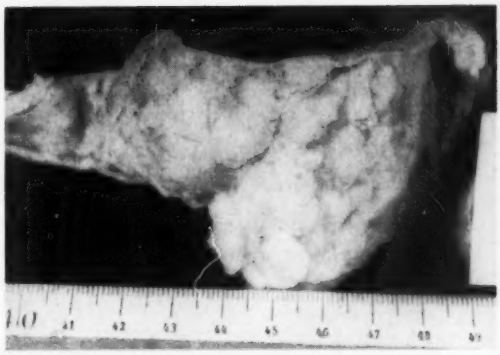

Fig. 1—Macroscopic appearance of the surface of the tumor.

The nodules were divided into incomplete subdivisions by thinner streaks of connective tissue. The cut surface of the tumor was also pink, with the exception of some areas, which were dark red. In some areas, neoplastic tissue was well delineated by connective tissue; in others, one could not distinguish its precise limits.

A number of specimens of the organs in the thoracic and abdominal cavities, particularly of the pancreas, were fixed in 10% formalin. Unfortunately, no specimens were collected from the central nervous system. The remainder of the pancreas was fixed separately in 10% formalin. Tissues were embedded in paraffin, and sections were cut

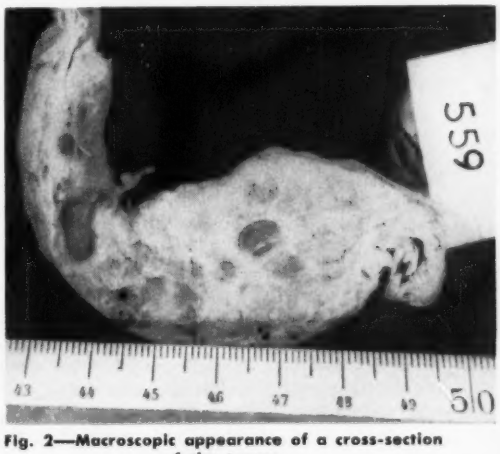

Fig. 2—Macroscopic appearance of a cross-section of the tumor.

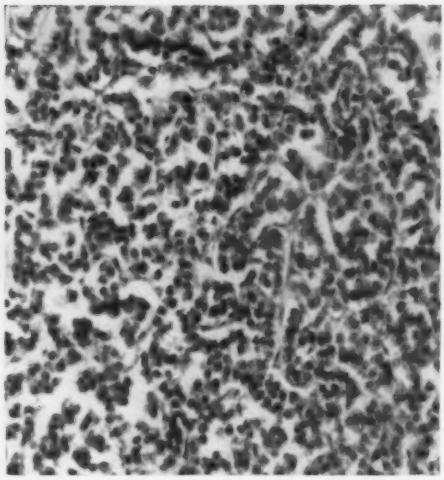

Fig. 3—Epithelial cells appear in the form of single-layered cords lying alongside the capillaries. H & E stain; x 200.

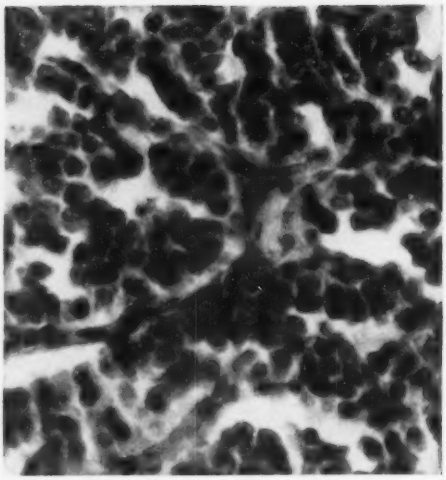

Fig. 4—Higher magnification of section of tumor shown in Figure 3. x 450.

and stained with hematoxylin-eosin. Sections from the pancreas with the tumor were also stained with Gomori's chrome-alum-hematoxylin-phloxine and aldehyde-fuchsin methods.

Histologic Findings.—Under low magnification, a cellular mass, divided and subdivided by strands of relatively abundant fibrous tissue, could be identified. In some areas of the mass, the fibrous tissue was so prominent that the tumor cells appeared only in nests inside the fibrous tissue. In some areas, the tumor and the pancreatic tissue were well separated; in others, there was no clear limitation in spite of abundant fibrous tissue.

Under higher magnification, the parenchyma appeared to be made up of epithelial cells, smaller and clearer than those of the acinar epithelium and more likely like pancreatic islet cells. The tumor was highly vascular, and there were a great number of capillaries among the epithelial cells. There was close relationship between the epithelial cells and the capillaries. The epithelial cells were in the form of cords lining the capillaries or in single or multiple layers (Fig. 3 and 4). Sometimes there was a small space between the capillary wall and the epithelial cells, probably due to shrinkage of the tissue during fixation and subsequent treatment.

In some areas, probably corresponding to those which grossly appeared red, a great number of erythrocytes could be seen outside the capillaries, between the tumor cells; at times, the erythrocytes predominated (Fig. 5).

Under high magnification, one could see that the neoplastic cells were uniform. The cells were polyhedric with a round nucleus, and the cytoplasm was uniformly pink. No

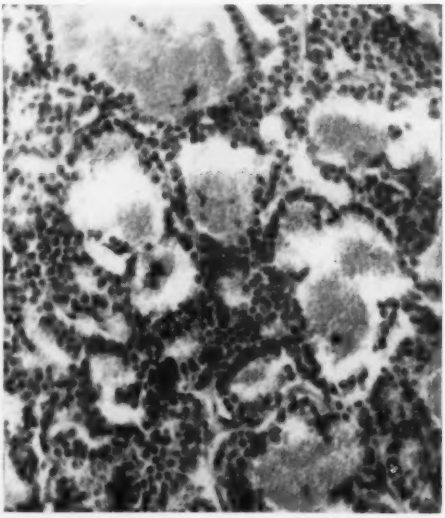

Fig. 5—Epithelial cells appear in the form of cords adjacent to the capillaries in single or several layers. Numerous erythrocytes are present between the epithelial cords. H & E stain; x 200.

mitosis was seen. In the places where the tumor was not well deliniated, it had invaded the pancreatic tissue, separating the acini (Fig. 6 and 7). In the sections stained with Gomori's chrome-alum-hematoxylin-phloxine method and in the sections stained with Gomori's aldehyde-fuchsin method, blue and violet granules, respectively, could be seen in the cytoplasm of tumor cells. These granules resemble those of *beta* cells of normal pancreatic islets.

Lung lesions consisted of purulent bronchopneumonia with extensive necrosis and much edema. No metastases of the pancreatic tumor were found in any organ.

Based upon the macroscopic and microscopic aspects, it was concluded that the tumor was derived from the cells of the islets of Langerhans. The history and the clinical data in the case were compatible with this diagnosis.

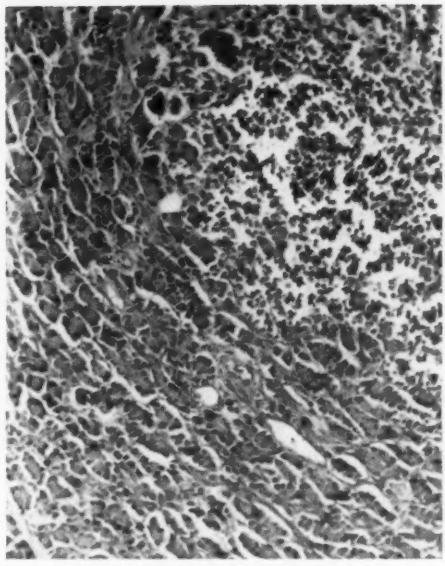

Fig. 6—Tumor cells infiltrate the pancreas. H & E stain; x 100.

Discussion

Of particular interest in this case was the convulsive syndrome, manifested for 3 months, which became increasingly more severe. During the last days of her life, the cow was not able to feed herself or rise to her feet. Descriptions of the occurrence of convulsions in animals that have had tumors of the islets of Langerhans have been reported in only a few dogs.[6,14,26] One author,[8] writes that severe hypoglycemia, due to insulin deficiency or any other cause, results in coma and, in some species, convulsions, because of insuffcient glucose available for the requirements of the central nervous system. Further, in general, the signs of hypoglycemia resulting from administration of insulin are similar in all species, but are not identical. According to some workers some animals such as the adult of the bovine species, do not have convulsions.[25] The following observations have been reported:[25] (1) In 3 experiments in cows, 800 to 1,000 units of insulin were administered intravenously in several divided doses over a few hours and, in all experiments, the animals had muscular tremors; (2) dilatation of the pupils and depression occurred in one animal in one of these experiments; and (3) profuse watery nasal excretions were evident in another animal. All signs disappeared within a short time.

In another instance, insulin was injected into cattle, causing hypoglycemia, and the following observations were made:[17] (1) Definite signs of hypoglycemia were observed in one cow, 1 to 8 hours after the intravenous administration of 5 units of

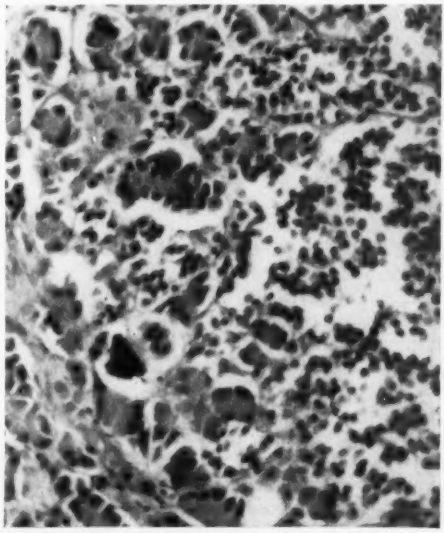

Fig. 7—Same tumor cells as shown in Figure 6. Tumor cells infiltrate the acini of the pancreatic tissue. H & E stain; x 200.

insulin per kilogram of body weight. In another cow, the signs were evident during a period 2 to 8 hours after the administration of 2 units of insulin per kilogram. Ten units of insulin per kilogram of body weight, given to this same cow, resulted in signs of hyperinsulinism beginning 2 hours later and lasting for 12 more hours. The signs consisted of dullness, refusal of feed, cessation of bowel movements or passage of only small amounts of firm feces and, in one animal, muscular tremors. (2) Four cows were given several injections of insulin and protamine zinc insulin over 16 to 24 hours. In these, grave signs were more frequent after prolonged periods of treatment, although the degree of hypoglycemia was more severe in the cattle which received insulin over shorter periods. The most important signs were: depression and lethargy, muscular tremors, hyperesthesia, poor prehension, unsteady gait, anorexia, hard and scarce feces, inability to rise or stand, marked incoordination, and stages of "near coma" or "near convulsions."

In the absence of reports on the occurrence of convulsions in cattle due to hypoglycemia under natural conditions (*i.e.*, with tumor of the islets of Langerhans) and because of the sparse experimental data in cattle in this respect, it is not possible to prove that the convulsions observed in this case were due to the tumor of the islets of Langerhans. However, it has been reported that near convulsions have occurred when hypoglycemia was prolonged.[17] In that report, the duration of the hypoglycemia was, at the most, 6 days.

Hypoglycemia of much longer duration probably occurred in the cow in this report, and it is possible that the convulsive signs observed might be the result of that prolonged hypoglycemia.

The most important necropsy finding was the tumor in the pancreas. Except for the lack of metastasis, its gross morphologic features fit the descriptions of most other tumors derived from the islets of Langerhans. The histopathologic features of the pancreatic tumor provided the basis for the diagnosis. With its intimate relationship with epithelial cells and numerous capillaries, the tumor had the typical characteristics of endocrine structures. It was possible to demonstrate granules of *beta* cells in the epithelial cells of the tumor which, in size and shape, also resembled the cells of the islets of Langerhans. The absence of mitosis, the abundance of connective tissue, and the tumor's infiltrative character were aspects which also have been described by other authors. The other findings—sinusitis, bronchopneumonia, and hepatic abscess, were considered incidental.

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Bacterial Infections Contribute to Death of Hypocalcemic Cow

A cow with hypocalcemia died in 20 hours in spite of calcium borogluconate therapy. On bacteriologic examination, septicemic *Corynebacterium pyogenes* infection was found to have originated in the mammary gland. *Pseudomonas pyocyanea* septicemia was also present.

On necropsy, there were kidney and liver damage and enlargement of the spleen. *Pseudomonas pyocyanea* was recovered from the kidney, spleen, and liver; *C. pyogenes* was recovered from milk, kidneys, and spleen.—*Austral. Vet. J., 36, (Oct., 1960): 411.*

New Brucellosis Test

A new method for detecting bovine brucellosis has promise of value as a supplemental test.

Called the heat inactivation test (H.I.T.), this method was designed and developed by veterinarians at USDA's National Animal Disease laboratory. While widespread use of this test under field conditions will be necessary before final evaluation can be made, research indicates that its primary value will be to supplement the standard tube and plate agglutination tests by clarifying the brucellosis status of cattle in problem herds.

The new test must be made in a laboratory by trained personnel. The serum and antigen solutions used are the same as those used in the standard tube test for brucellosis. In the new test, the serum-antigen mixture is heated in a water bath for 15 minutes at 65 C. The samples are cooled immediately to 18 C., centrifuged at 1,000 times gravity, decanted, resuspended in 0.85% NaCl solution, and examined for reaction. Any reaction shown in a 1:25 or higher dilution of serum is considered positive and a specific indication of Brucella infection.—*USDA Delease, March 23, 1961.*

Sulfabromomethazine as a Herd Treatment for Bovine Foot Rot

Harold Breen, D.V.M., and J. F. Ryff, D.V.M.

FOR THE past several winters, foot rot has been a problem following weaning of the approximately 2,500 calves of the Arapahoe Ranch in central Wyoming. Organic iodides at first offered some promise of herd control, but eventually affected calves again had to be handled and treated individually. In January and February, 1959, 1,500 calves had to be treated individually for foot rot.

Sulfabromomethazine* has been reported to maintain longer blood levels than its nonhalogenated analogue.[4] Cattle in the early stages of acute foot rot usually respond favorably to sulfonamide or antibiotic therapy,[1] and sulfabromomethazine has been found effective against foot rot.[2,3] When one intraperitoneal injection of sodium sulfabromomethazine at ¾ gr. per pound of body weight was given to 12 Wyoming steers with mild to severe foot rot, complete clinical recovery occurred in 11. Even so, the drug still represented only another means of individual treatment until it was decided to incorporate it in the feed as a possible prophylactic agent.

Procedure

The calves were weaned at the ranch pens in the last part of October and in November, 1959. Hay and a pelleted ration were fed at this time. In this experiment, there were 200 control calves and 200 others to be given medicated feed. While it would have been preferable to allot the calves to groups randomly in regard to sex, ranch conditions necessitated using heifer calves for controls and steer calves for principals. The 2 pastures made available were identical environments and had the same water supply. Each calf weighed approximately 300 lb.

A 22% protein ration with the following composition was formulated: 900 lb. barley, 400 lb. cottonseed cake, 25 lb. oats, 100 lb. molasses, 400 lb. field peas, 100 lb. beet pulp, and 100 lb. dehydrated alfalfa. Sulfabromomethazine was added to this protein ration at the rate of 0.5 oz. (14.17 Gm.) per pound (equivalent to 1 oz./head/day) when treatment was desired. Subsequent analysis of this feed after mixing with sulfabromomethazine and pelleting disclosed a level of 0.92 oz. (26.08 Gm.) of sulfabromomethazine per 2 lb. of feed.

To the principals, 2 lb./head/day of the unmedicated protein ration was fed until foot rot became evident, when the sulfabromomethazine-medicated feed was substituted for 2 days. Whenever foot rot was detected in the principals, the procedure of supplying 1 oz. of sulfabromomethazine in 2 lb. of pelleted feed was repeated. An organic iodide mixed with salt was available to both groups at all times. The control calves were fed 2 lb. of untreated 22% protein ration per head daily. In the control group, calves with foot rot were handled and treated as in the remainder of the herd.

Results

Foot rot was most troublesome from Dec. 19, 1959, through the first week of February. During this period, the 200 principals were given 5 series of feedings with sulfabromomethazine-medicated feed each time foot rot appeared (Table 1). This was the only treatment given except for one calf

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*The sulfabromomethazine used in this study was furnished by Dr. G. E. Brightenback of Merck Sharp and Dohme Research Laboratories, Rahway, N.J. The assistance of Mr. M. E. Linn, manager of the Arapahoe Ranch, Thermopolis, Wyo., in providing facilities for this trial is also acknowledged.

TABLE 1—Incidence of Foot Rot in Sulfabromomethazine-Treated and Control Calves

Experimental group of 200 calves			Control group of 200 calves		
Date	No. cases foot rot	Medicated pellets fed*	Date	Foot rot cases treated**	Other conditions observed
12/19	3	400 lb.	12/20	30	Keratitis (12)
12/20	0	400 lb.	12/24	14	Scours (1)
12/26	5	400 lb.	12/26	13	Scours (2)
12/27	0	400 lb.	12/27	18	Scours (3)
			12/28	16	
1/7	3	400 lb.	1/5	2	Calf diphtheria (1)
1/8	0	400 lb.	1/6	18	
1/19	1	400 lb.	1/7	5	
1/26	1**	400 lb.	1/9	16	
1/27	†	400 lb.	2/3	4	Calf diphtheria (3)
			2/6	2	
			2/9	4	
			2/14	5	

*All calves were given 2 lb. of pelleted feed daily. In the experimental group, 2 lb. of pellets containing 1 oz. of sulfabromomethazine was fed per head as indicated whenever foot rot was detected.
**These cattle with foot rot were treated individually. †1 case of calf diphtheria seen.

which had to be treated by hand in January. In 13 principals, foot rot developed and 12 responded favorably to the medicated feed without other treatment. Possibly incipient cases were halted by this procedure, but an outstanding advantage was that affected calves did not have to be separated from the rest and handled for treatment. In the 200 controls, 147 clinical cases of foot rot developed.

To the principals, 400 lb. of the medicated pellets were fed December 19 and 20, December 26 and 27, January 7 and 8, January 19, and January 26 and 27. The calves did not accept the medicated feed as well as the nonmedicated and became increasingly reluctant to eat it. For this reason, only one feeding was given January 19. At the final feeding on January 26 and 27, they practically refused it. As a result, the one affected calf seen January 26 was treated by hand.

The 200 controls weighed an average of 265 lb. on Dec. 12, 1959, at the start of the experimental period and 355 lb. on April 23, 1960, an average gain of 90 lb. Each of the 200 principals weighed an average of 267 lb. on Dec. 15, 1959, and 367 lb. on April 12, an average gain of 100 lb. However, the controls were heifer calves and the principals were steer calves, and this same weight differential existed throughout the calf crop.

The main herd of calves consisted of 2,298 head after the 400 had been removed. By the middle of January, between 150 and 175 cattle with clinical evidence of foot rot were being seen daily, removed from the group, and subjected to individual treatment. By utilizing early treatment, few repetitions were necessary, but prompt removal and treatment of affected calves was necessary. Because good results were secured with the medicated feed and since less was used than originally expected, 4,400 lb. of sulfabromomethazine-fortified feed was fed at one time to the 2,298 head on January 18. The clinical cases of foot rot ceased for a short time following this. The incidence of the disease markedly declined after January. In this group of 2,298 head, 1,182 with clinical cases of foot rot had been treated individually with sulfapyridine or a combination of penicillin and streptomycin prior to the use of sulfabromomethazine in the feed.

Conclusion

Incidence of foot rot was reduced in 200 calves given 1 oz. of sulfabromomethazine in feed for 2 days whenever the condition was detected in the group. Only 13 of the 200 treated calves developed foot rot as compared with 147 of 200 untreated controls where affected calves had to be removed and treated individually. In addition, the labor involved in separating affected calves and handling them in treatment was eliminated. However, in spite of attempting to mask the taste of sulfabromomethazine by incorporating it in 2 lb. of feed, the resulting mixture was distinctly unpalatable. In spite of the time interval between its usage, the calves found it less palatable at each successive medication period. Possibly equally beneficial results could have been secured by reducing the amount of sulfabromomethazine, and this alternative is contemplated for future application. No indication of toxicity was observed using the sulfabromomethazine as described.

Summary

On a ranch where foot rot has been a major problem in weaned calves, sulfabromomethazine was fed to 200 calves at the rate of 1 oz. of drug in 2 lb. of pelleted feed per head for 2 days whenever foot rot appeared. Five such feedings were necessary. Thirteen cattle had foot rot; only one required further treatment. In the untreated group of 200, 147 developed foot rot and were treated individually. In the main herd of 2,298 calves, 1,182 cattle with foot rot were treated individually. Near the close of the foot rot season, this medicated feed was supplied to the main herd for one day and was followed by an immediate drop in the number of cases observed.

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ESR and Blood Viscosity Modified by Fat Emulsions

The emulsifier and not the oil component of the chylomicron is responsible for the influence of intravenous fat emulsions on erythrocyte sedimentation rate (ESR) and blood viscosity.

Cottonseed oil emulsions containing lecithin markedly depressed ESR and increased blood viscosity of human and dog blood. In an *in vivo* study in dogs, this effect of lecithin was only temporary; blood drawn 24 hours after an infusion of a lecithin emulsion had a normal ESR.—*Am. J. Physiol., 199, (Nov., 1960): 800.*

Rinderpest Notes

For the purpose of diagnosing rinderpest in cattle, antigen was extracted from mesenteric, mandibular, and prescapular lymph nodes by high-speed homogenization and differential centrifugation. Using fixed concentrations of the antigen and antibodies from serums of suspected cattle and varying dilutions of complement, diagnosis could be made in an hour.

Current information indicates that rinderpest infection can be obtained only by direct contact with infectious secretions and excretions. Although immunization has been successful, virus strains differ depending on geographical area and breed involved. Most affected cattle die in a week. Mortality is approximately 90%.—*Agric. Res. (Oct., 1960): 6.*

Nephrectomy in Cattle and Sheep

D. Horney, D.V.M., and J. Archibald, D.V.M., M.V.Sc.

THE REMOVAL of a kidney from small domestic animals has been reported.[1-3] The operation has been performed experimentally and on clinical patients. Nephrectomy has been reported in 2 goats, one affected with pyelonephritis, the other with an *Echniococcus* cyst.[4] The operation has not, however, been used extensively in farm animals.

In the past few years, the authors have, in a course of instruction in surgery, had students perform nephrectomies in sheep. Recently, the practicability of performing nephrectomies in cattle was questioned. By using the same technique in cattle as in sheep, removal of the left kidney was performed without difficulty.

Anesthesia and Restraint

In sheep, the operation is performed under general anesthesia. The sheep is restrained in lateral recumbency on a small animal operating table. In cattle, the operation may be performed with the animal in a standing position restrained in stocks. Paravertebral anesthesia is used.

Surgical Technique

The entire flank area is surgically prepared and sterile technique is used throughout the operation.

A horizontal incision is made in the skin about 2 inches below the transverse processes of the lumbar vertebrae, extending from the border of the last rib posteriorly to the region of the 5th lumbar transverse process.

The muscle layers are opened, using a muscle separation technique, *i.e.*, the fascia is incised and the muscle layers separated in the direction of their fibers. This technique has the advantage of being remarkably bloodless; closure of the muscle layers at the conclusion of the operation is facilitated by the separated muscle fibers returning to their normal position.

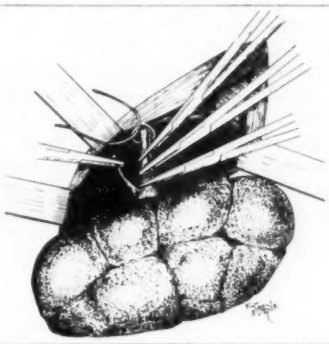

Fig. 1—Ligation of the kidney pedicle in a cow.

In both species, the kidney can be removed retroperitoneally, but the peritoneum is often inadvertantly perforated. When the kidney is identified, the peritoneal reflection and perirenal fat are stripped away by blunt dissection. In sheep this maneuver will free the kidney sufficiently to permit its withdrawal through the wound. In cattle, however, such an exposure is more difficult and the removal of the kidney must be carried out within the abdomen.

When the kidney has been freed, the ureter is identified and divided between ligatures. The pedicle of the kidney (the renal artery and vein) is clamped with 3 compression forceps (Rochester-Pean curved). The kidney is now removed by severing between the 2 distal forceps. The pedicle is tied by placing a ligature proximal to the remaining forceps and the forceps are removed (Fig. 1).

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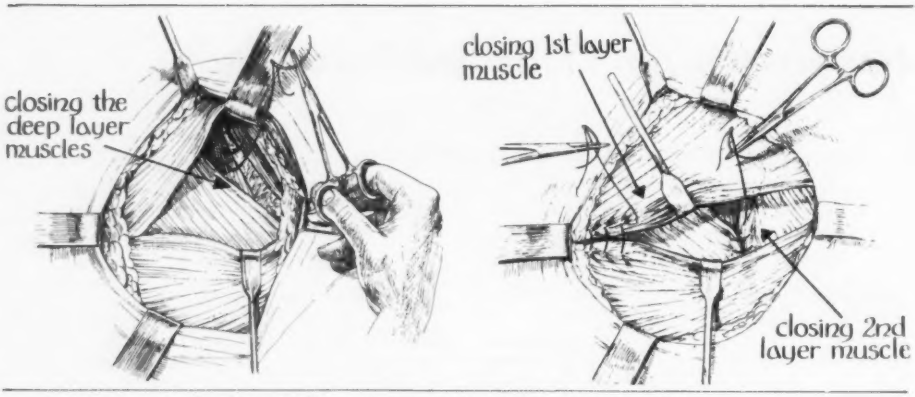

Fig. 2, 3—Abdominal closure of cow after removal of kidney.

The abdomen is closed by apposition of the separated muscle fibers as illustrated (Fig. 2 and 3).

The authors realize that indications for this operation in cattle are few but suggest that, when presented with a practical technique for removal of a kidney, veterinarians will come to utilize the technique. Prospective indications for nephrectomy would be unilateral pyelonephritis, renal lithiasis, and trauma.

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Photosensitization from Commonly Used Drugs Not Serious

The antibacterial sulfonamides, the sulfonylurea hypoglycemic agents for combating diabetes, the chlorothiazide diuretics, and certain tranquilizing agents of phenothiazine origin may induce cutaneous reactions in man when the patient is exposed to sunlight. There are numerous reports that demethylated chlortetracycline may act as a photosensitizing agent, and a few reports that griseofulvin may do so. The photosensitization dermatoses that result from use of these drugs are not commonly associated with serious reactions.—*J.Am.M.A., 174, (Dec., 17, 1960): 2043.*

Metastatic Calcification Associated with White Muscle Disease in Lambs

M. R. Gardiner, V.M.D.

DURING the winter of 1960, white muscle disease (WMD) was diagnosed for the first time in the southwestern division of Western Australia. The winter season had been unusually favorable for pasture growth, and all the usual species, both annuals and perennials, grew well, especially the principal leguminous plant, subterranean clover (*Trifolium subterraneanum*, L.).

The majority of WMD occurrences were between August 15 and October 1 and coincided with the time of most rapid growth of pasture. Affected lambs were generally 3 to 4 months old, but the disease was seen in lambs as young as 2 weeks and as old as 5 months. White muscle disease appeared to be related more to seasonal influences than to the age of lambs since, in the course of an epizootic, lambs of many ages were affected.

Report of an Epizootic

The epizootic of WMD began toward the end of August in the Pinjarra District and involved a flock of 400 crossbred, unweaned lambs ranging from 2 to 4 months old. Losses appeared to coincide with the use of a proprietary anthelmintic drench containing arsenic (AS_2O_3), copper ($CuSO_4$), and carbon tetrachloride (CCl_4). During the ensuing 2 to 3 weeks, at least 30 lambs died. The course of the disease was rapid, death occurring within 2 to 5 days after a progressive syndrome of muscle weakness, coarse muscular tremors, severe diarrhea, and eventually prostration. During subsequent weeks, 2 or 3 weanling lambs died each week, and the flock remained generally unthrifty.

Upon botanical survey of the paddock in which the lambs had been held, the herbage was found to be in an excellent state of growth. Species identified included subterranean clover, drooping flower clover (*Trifolium cernuum*, Brot.), hop clover (*Trifolium campeste*), narrow leaf trefoil (*Lotus angustissimus*. L.), Wimmera rye grass (*Lolium rigidum*, Gaud), and capeweed (*Cryptostemma calendulacea*, L.), together with a few other annual species. No known toxic plants were seen. The subterranean clover concentration in the paddock was estimated at more than 50%.

Gross Pathologic Findings

Several moribund lambs were examined at the laboratory. Others, which were necropsied on the premises, had some or all of the gross changes observed in the lambs studied at the laboratory.

On gross examination, typical necrotic lesions of WMD were seen in both the heart and skeletal muscles. However, the most remarkable lesions appeared in a number of well-defined areas of the body as heavy white chalky deposits of calcium salts. In the lambs examined, the kidneys, pancreas, fundal portion of the abomasum, duodenum, and occasionally the entire small intestine and lungs were affected in this manner. The liver, pyloric region of the abomasum, and spleen were macroscopically normal. The kidneys had a chalk-white cortex sharply delineated from a deep reddish medulla. The pathologic findings were so extraordinary that extensive histologic observations were made.

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The author thanks J. Craig, M.R.C.V.S., for his helpful suggestions; Mr. T. Aplin, botanical branch, Department of Agriculture, for the pasture survey; and Mr. H. Sharp for the histologic preparations.

Histopathologic Findings

The liver (grossly normal) had a centrilobular mesh of empty spaces in which appeared many large syncytial or giant cells and small compact bundles of connective tissue. Some of the giant cells had as many as 20 to 25 nuclei.

The proximal convoluted tubules of the kidney were vacuolated with cloudy swelling and often were desquamated. The distal convoluted and medullary tubules contained long granular casts. Interstitial and periglomerular fibrosis occurred everywhere in the cortex, and there were epithelial cell proliferations of the glomerular tufts and capsules of Bowman.

Cortical calcification was widespread in the glomerular capillary and afferent arteriolar walls, in the affected cells of the proximal convoluted tubules, in the granular casts of the distal convoluted tubules, and in the walls of the cortical arteries. A granular exudate, which filled many of the air spaces of the lung, was composed of lymphocytes, neutrophils, and alveolar phagocytes, many of which were calcified. There were heavy deposits of calcium salts in the walls and lining the sides of the air spaces; the alveolar exudate contained much granular calcium.

In the pancreas, there was separation of the acinar cells from the basement membranes, and some acini were undergoing necrosis and calcification. The chief sites of calcification were in the basement membranes and in the capillary walls of the interacinar and interlobular septums.

The deep layers of the fundal mucosa of the abomasum were disorganized by necrosis and vacuolation of cells and infiltrated with neutrophils and connective tissue. The submucosa was greatly thickened and infiltrated with inflammatory cells. All levels, especially submucosal, were diffused with calcium salts. The mucosa of the small intestine was invaded with inflammatory cells and connective tissue; Brunner's glands were dilated. Heavy deposits of calcium salts were seen in the outer parts of the submucosa along the muscle layers, in the lumens of Brunner's glands, in the submucosal connective tissue, and sometimes in the mucosal cells adjacent to the muscularis mucosae. There were large reactive centers in the lymphoid follicles of the spleen, and granular calcified material seemed to be sprinkled throughout the red pulp.

All sections of the heart had innumerable small linear areas of cell atrophy and necrosis obscured by proliferating muscle cell nuclei. There were focal areas of intense calcification of muscle cells, especially adjacent to vessels. Many of the necrotic muscle foci did not have affinity for calcium.

Both the serum calcium and serum magnesium were increased in the one lamb in which these determinations were made, with values of 12.3 mg./100 cc. and 4.72 mg./100 cc., respectively. There was no obvious nutritional source for the increased calcium salts in this flock. The drinking water was supplied by a deep well. Upon analysis, rather hard water with 80.0 gr. of total soluble salts per gallon of water was found, of which 49.0 gr. were sodium chloride; 4.5 gr., calcium; and 3.0 gr., magnesium; there were 0.6 p.p.m. of phosphorus. All of these values are within normal limits for a majority of potable Western Australian agricultural waters.

Discussion

Although WMD was seen occasionally throughout the winter and, in some of these lambs, muscle necrosis was associated with calcification, in no other epizootic did classical metastatic calcification occur. According to a summary of the modern view of metastatic calcification,[4] this manifestation of abnormal mineral metabolism results from high levels of calcium and phosphorus in the blood. In this summary, it is stated, "Whatever the mechanism by which it is brought about, there is no doubt that renal damage almost always accompanies calcium metastasis."[4]

The classical sites of predilection for metastatic calcification are precisely those which were observed in our affected sheep, namely, kidneys, alveoli of the lungs, mucosae of the stomach, and media of the blood vessels. Unfortunately, blood phosphorus levels were not determined for any of these lambs, but extensive renal damage found in our studies and the usual mechanism of interference with excretion of phosphate and with subsequent parathyroid activation can be postulated to account for the pathologic calcification.

However, the most interesting aspects of this condition involve the possible precipitation of calcium by the anthelmintic

drench. This drench contained 3 ingredients, each of which is toxic to sheep under certain conditions. Of the 2.5 cc. recommended dose for lambs up to 8 months old, 40% was carbon tetrachloride; thus, every lamb must have been given at least 1.0 cc. of the drug. Although sheep can tolerate doses much greater than this, occasional idiosyncrasies have been seen. The loss of 26 of 220 Suffolk ewes, following the administration of 1 cc. capsules of carbon tetrachloride, has been reported.[1] Abnormal susceptibility of adult sheep to doses of as low as 1 to 2 cc., with occasional deaths, has been discussed, and the relationship of low blood calcium level to loss of resistance to carbon tetrachloride intoxication considered.[2] Our study lends no support to this theory in view of the evidence of hypercalcemia in our lambs. Carbon tetrachloride is a well-known hepatotoxin and undoubtedly was directly responsible for the centrilobular liver lesions found in our lambs.

New Zealand workers[3,5] have shown the prevalence of stiff lamb disease in selenium-deficient country and its prevention by low level administration of this trace element. Furthermore, in a recent short communication, another investigator[7] reported that ewes on a low selenium diet were markedly susceptible to 1 ml. doses of carbon tetrachloride, administered orally, the dose given to the lambs in this epizootic. The abnormal sensitivity of these lambs suggests the possibility of selenium deficiency as a common basis for WMD and other pathologic manifestations. There is, of course, no doubt that selenium deficiency can lead directly to WMD in lambs, but only recent evidence suggests that deficient animals can also be abnormally sensitive to toxic substances such as carbon tetrachloride. At this time, little or no work has been done on the etiologic factors of WMD in Western Australia.

Experimentally, vitamin E will, to some extent, protect rats from the toxic effects of carbon tetrachloride.[6] The relative importance of vitamin E and selenium deficiencies in lambs with WMD in Western Australia is a subject for future research.

There are no indications for the use of carbon tetrachloride as an anthelmintic for sheep in Western Australia; its involvement in this instance must, therefore, be regarded as an extremely rare complication. Nevertheless, the occurrence of the epizootic after the administration of the drench suggests new possibilities in the etiology of WMD, the susceptibility of sheep to toxic substances, and the mechanism of metastatic calcification.

The kidney lesions in these lambs were also of great interest. The tubular cell degeneration might, of course, have been ascribed to the effect of the carbon tetrachloride toxicity on the same basis as mentioned in regard to the liver lesions. Attention has been drawn to glomerular lesions of WMD experimentally induced in lambs.[8] Similar lesions were found in our lambs, especially proliferation of the epithelial cells of the capillaries and of Bowman's capsules, and they have been seen in other WMD epizootics in the current Western Australian series.

The roles played by the 2 other toxic substances included in the drench (copper and arsenic) are unknown, but the low levels of each indicated that a harmful effect is unlikely. None of the known pathologic manifestations of copper poisoning were seen in our lambs but, in view of its occasional occurrence in Western Australian sheep and the high level of copper in subterranean clover, subtle biochemical participation cannot be excluded. The case for arsenic is equally obscure. Arsenic is known to counteract the toxic effects of selenium but there is no available work to indicate antagonism to normal or low levels of the element. At any rate, the possible combined activity of these noxious agents on the metabolism of vitamin E or selenium cannot be ignored. It is difficult to explain the greatly increased susceptibility of occasional flocks on any other basis than malfunctioning at a cellular enzyme level.

Summary

An epizootic of white muscle disease (WMD) in lambs, a newly recognized disease in Western Australian sheep, is discussed. Particular reference is made to the possible precipitating effect of an anthelmintic drench containing arsenic, copper, and carbon tetrachloride and to the concomitant occurrence of renal damage and classical metastatic calcification. The relationship of known and unknown factors involved in these pathologic entities is outlined. The precise etiology of WMD in Western Australia is poorly understood at

present, but the probable association of selenium deficiency, vitamin E deficiency, or both in the causation of the disease and in the decreased tolerance to toxic substances such as carbon tetrachloride and arsenic is discussed.

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Pulmonary Anatomy—Horse and Man

In a study of 52 pairs of lungs representing 8 mammalian species (ox, pig, sheep, dog, cat, monkey, horse, and man), it was learned that the lungs of the horse are remarkably similar anatomically to those of man. Because the horse is the only lower animal commonly known to develop chronic generalized pulmonary emphysema in a form similar to that seen in man, it was suggested that the horse would be a proper experimental animal for pulmonary studies. The finding of an alveolar distribution of the bronchial arteries in both horse and man implies a nutrient function at this level and lends indirect support to the possibility that emphysema can result from diseases in this vessel.—*Richard F. McLaughlin, Jr., M.D., et al., in J.Am.M.A., 175, (Feb. 25, 1961): 148.*

Colic in Horses

Colic in horses occurs even in well-regulated stables. The first thing to do for a horse with colic is to control pain. Walking the horse will help prevent convulsions and a resultant torsion or rupture.

To soften and lubricate the mass, ½ to 1 gal. of mineral oil may be given. Four or 5 gal. of oil may be required over a period of several days when serious impaction is present. Chances of recovery from impaction cases are good provided the pulse remains strong. Twenty-four hours after oil is given, administration of a bowel stimulant is advisable. Strychnine, given several times daily along with walking exercise, may be helpful.

A few conditions not involving the digestive tract simulate colic. Geldings with an excessive accumulation of smegma in the urethral diverticulum may appear to have colic. Even a tight bandage around the tail has been known to make a pony behave as if he had colic.—*Canad. Vet. J., 1, (Dec., 1960): 538.*

Relationship of Progesterone to Prolonged Gestation in Cattle

George K. Kiesel, D.V.M., and K. M. Autrey, Ph.D.

THIS EXPERIMENT was conducted to determine if prolonged gestation and fetal giantism could be produced in apparently normal cows by the intramuscular injection of progesterone.*

Materials and Methods

Six cows (No. 17, 36, 61, 104, 132, and 139) in various stages of pregnancy from the Auburn University dairy herd were used. Cows 61, 104, and 132 were given weekly injections of 500 mg. of progesterone. Cow 17 was given 8 weekly injections of 500 mg. followed by 6 on a twice-weekly basis. Cow 139 was given 7 weekly injections of 500 mg. and then 15 on a twice-weekly basis. Cow 36 was given 500 mg. twice a week for 6 weeks (Table 1).

Results

In cow 17 and cow 104, there was prolonged gestation (Tables 1 and 2). In both cows, the udder enlarged up until the time the cows would have calved normally, and then the udder enlargement slowly receded. It appeared as if the fetal membranes detached from the uterine caruncles a few days after the normal time of parturition and a static fetal cadaver resulted. The

TABLE 1—The Effect of Progesterone on the Gestation Period of 6 Experimental Cows

Cow	Breed & age	Gestation period (days)	Progesterone given	Therapy period (days)	Results
17	Jersey-10	332	7,000 mg.	67	Dead calf, forced extraction 49 days after EPD,* 36 days after last injection.
36	¼ Sindhi ¼ Jersey ½ Holstein-Friesian-5	285	6,000 mg.	40	Normal calf 2 days after EPD, 5 days after last treatment.
61	Jersey-8	283	2,000 mg. (500 mg. weekly)	21	Normal calf on EPD, 6 days after last treatment.
104	Jersey-7	330	4,000 mg. (500 mg. weekly)	49	Dead calf, forced extraction, 47 days after EPD, 19 days after last treatment.
132	Jersey-5	274	2,500 mg. (500 mg. weekly)	25	Normal calf 9 days before EPD, 6 days after last treatment.
139	Jersey-4	281	11,000 mg.	102	Normal calf 2 days before EPD on same day as last treatment.

*EPD = Expected parturition date; 283 days is considered the average gestation period for a cow.

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Approved by the Publications Committee, School of Veterinary Medicine, Auburn University as publication No. 881.

*Repositol Progesterone, Allied Laboratories, Inc., Indianapolis, Ind.

TABLE 2—Gestation Periods for Experimental Cows, in Days

Calving year	Cow 17	Cow 36	Cow 61	Cow 104	Cow 132	Cow 139
1951	282	.....	.....	.....	.....	.....
1952	.....	.....	.....	.....	.....	.....
1953	286	.....	280	.....	.....	.....
1954	280	.....	279	.....	.....	.....
1955	285	.....	.....	276	.....	.....
1956	292	Pasture bred	282	274	.....	.....
1957	286	280	283	278	275	Pasture bred
1958	283	282	282	269	271	277
Average	284.8	281.0	283.2	274.2	273.0	277.0
1959-60*	332	285	283	330	274	281

*Cows were given progesterone.

cervix failed to dilate and the fetal membranes began to disintegrate. Cow 17 was given 1,000 mg. of diethylstilbestrol* over a period of 4 days to dilate the cervix, and 5 days later a dead, dry fetus was removed by forced extraction. This was 49 days after the cow would have calved normally. The cow recovered without complications but failed to produce any milk. The pattern was the same for cow 104. She was given 400 mg. of diethylstilbestrol over a period of 3 days. On the day of the last injection, a dead fetus was removed by forced extraction. She, too, failed to produce milk, although she developed no other ill effects.

Discussion and Conclusion

It is known that prolonged gestation in cattle with fetal giantism may be caused by a simple recessive hereditary character.[1,3] In a study of the effects of prepartum administration of progesterone to a cow, 500 mg. of progesterone was given cows on the 33rd, 23rd, and 13th days, respectively, before parturition. Cows in another group were given 100 mg. each on the 3rd and 2nd days before parturition. Results indicate that there was no significant alteration of gestation length and there was no significant difference in the post-treatment production level as a result of the treatments.[2]

Preliminary investigation was conducted in an effort to find out if prolonged gestation could be reproduced in normal cows by the administration of large amounts of progesterone. The results have indicated that progesterone alone will not produce the condition.

*Repositol Diethylstilbestrol, Allied Laboratories, Inc., Indianapolis, Ind.

References

[1]Jasper, D. E.: Prolonged Gestation in the Bovine. Cornell Vet., 40, (1950): 165.

[2]McDonald, L. E., and Hays, R. E.: The Effects of Prepartum Administration of Progesterone to the Cow. Am. J. Vet. Res., 19, (Jan., 1958): 97-98.

[3]Mead, S. W., Gregory, P. W., and Regan, W. M.: Prolonged Gestation of Genetic Origin in Cattle. J. Dai. Sci., 32, (1949): 705.

Prescription Feeds for Food Animals Illegal Without NDA

The concentrates (containing new drugs) that feed dealers, custom mixers, and feeders obtain cannot legally be employed for "prescription compounding" even on the prescription of a veterinarian unless the "prescription" is the subject of an effective new drug application (NDA).

It had been thought previously by some that veterinarians could prescribe medications in feed when needed. In effect, veterinarians cannot prescribe as they see fit in accordance with ethical standards and their knowledge of disease and drug usage alone.—*AFMA Bull. (Dec. 22, 1960): 4.*

Editorial

On the Temperament of Guide Dogs

We all know it's mighty risky to criticize the temperament of a client's dog, but what if the dog happens to be a guide dog?

A certain blind person found it necessary to retire a fine guide dog because it became old and infirm. The replacement, a young female German Shepherd Dog, was timid and cowering, and struggled to escape when brought to the clinic for examination. When placed on the examination table, she urinated involuntarily. The treatment completed, she then proceeded to pull her owner out the door and down the street.

—Chicago Sun-Times

This experienced owner needed no one to tell her that something serious was wrong. But what of those instances when apparent signs of unsuitability are much less pronounced? Can you be sure they are not just temporarily in evidence, that they are not due to physical disorder or unpleasant memory-association with the environment of a veterinary facility?

Comments to a blind owner relative to the unsuitability of his dog can be far-reaching, especially if they are made by a veterinarian. What may start as concern can lead quickly to a chain of nervous reactions that are all too readily reflected in the dog's behavior. By the time word of the difficulty reaches the training school, it may be nearly impossible to re-establish the proper relationship between owner and school.

Commenting on the problem, Mr. George Werntz, Jr., executive vice-president and secretary of Seeing Eye, Inc., said:

> Unfortunately, there are doubtless a number of cases in which the temperament of a prospective dog guide has not been accurately assessed by those responsible for its selection and training. In other instances, perhaps, inept handling by the blind person or some traumatic experience may have greatly changed the character and temperament of a particular dog.
>
> If there would be any way in which an opinion or prediction of instability could be relayed directly to the dog guide school responsible, we would hope that the school would make an investigation through its regular channels.
>
> It is natural for many blind people to rely heavily on the opinions of sighted friends, professional advisors, and others from whom they seek opinion. We feel it is important that opinions regarding a dog's health or stability should not be lightly made. We do not wish to convey the impression that blind people are immature and are unable to accept facts; on the other hand, we like to be sure of our facts before expressing an opinion to them, and that we express the opinion in the most helpful way possible.

It would seem prudent for the veterinarian to report to the training school what seems to be excessive nervousness or instability in a guide dog. Then, even if the practitioner feels that the school has not followed up, he could well consider discussing the matter with a mature and understanding member of the blind person's family. Surely we owe careful consideration of this problem to the dedicated training personnel who make it possible for dogs to serve such a noble purpose.—D.A.P.

from the *Research Journal*

Emulsified Fat for Intraperitoneal Alimentation

Experiments were conducted with rats to determine: (1) the rate of absorption of emulsified fat from the peritoneal cavity; (2) the total daily absorption of different levels of emulsified fat from the peritoneal cavity; and (3) the effect of daily intraperitoneal injections of different levels of emulsified fat.

Three to 4 ml./100 Gm. of body weight was the maximum amount of emulsified fat that could be absorbed by a normal rat in 24 hours.

The daily administration of as little as 5 ml. of emulsified fat per 100 Gm. of body weight caused severe ascites in rats after 5 to 10 days. None of the rats given 2.5 ml./100 Gm. of body weight developed ascites.—[*M. J. Burns and C. H. Clark: Use of Emulsified Fat for Intraperitoneal Alimentation. Am. J. Vet. Res., 22, (Jan., 1961):147-149.*]

Reproduction and Vitamin E

Vitamin K and chlortetracycline, fed at a level of 0.03% of the ration, were effective in overcoming vitamin E deficiency to the extent of permitting female rats to bear young. Chlortetracycline was more effective in overcoming vitamin E deficiency than vitamin K, in that it enabled the females to bear young and raise them to weaning age. The average weight gain of rats fed the basal ration plus vitamin E was significantly greater than that of rats not fed vitamin E. Vitamin K and chlortetracycline increased the body weight gains significantly and about equally.—[*E. F. Reber and H. W. Norton: Studies of the Effects of Chlortetracycline, Vitamin E, and Vitamin K on the Nutrition of the Rat. II. Reproduction. Am. J. Vet. Res., 21, (Sept., 1960): 898-901.*]

Oxyuriasis in Laboratory Mice

Piperazine citrate and piperazine hexahydrate were most effective in ridding inbred and F_1 hybrid mice of oxyurids (*Syphacia obvelata* and *Aspiculuris tetraptera*) when administered in drinking water. A single course of therapy (200 mg./kg. of body weight daily for 7 consecutive days, succeeded by a period of 7 days with no drug, followed by another week of treatment with medicated water) was successful when mice were removed to sanitized quarters during or immediately after drug administration.

It is suggested that rectal irritation caused by oxyurid infection may predispose mice to rectal prolapse, particularly when infection is accompanied by the stress of shipping and drastic change of diet.—[*W. G. Hoag: Oxyuriasis in Laboratory Mouse Colonies. Am. J. Vet. Res., 22, (Jan., 1961):150-153.*]

Cardiac Output in Anesthetized Deer

Eight white-tailed deer (*Odocoileus virginianus* var. *borealis*), 5 to 24 months old, were anesthetized and cardiac output, along with other parameters was studied. The mean cardiac output, determined by the dye dilution technique, was 114 ml./kg./min. The mean aortic and right ventricular blood pressures were 104 mm.Hg. and 14 mm.Hg., respectively. The calculated peripheral resistance was of the same magnitude as that for man. The mean packed cell volume was 35.9%, and the mean total blood volume was 65 ml./kg.—[*A. L. Good, C. M. Stowe, and L. Blankenship: Cardiac Output and Related Values in Anesthetized Deer. Am. J. Vet. Res., 22, (Jan., 1961):156-158.*]

Tuberculin Reaction Size

Eighteen cattle, sensitized with *Mycobacterium tuberculosis* var. *bovis* in mineral oil, were tested with intradermal tuberculin. The number of injections given to an individual animal in a given test varied from 1 to 60. Thirty days after each test, the animals were rotated so that each was given a different number of injections on the subsequent test. It was found that as the number of simultaneous tuberculin injections increased, the average size reaction that each would elicit decreased.—[*A. B. Larsen, T. H. Vardaman, and W. R. Harvey: Tuberculin Reaction Size as Related to the Number of Simultaneous Tuberculin Injections. Am. J. Vet. Res., 21, (Nov., 1960): 1075-1077.*]

Effect of Hormones on Uterine Defense

Progesterone inhibited the bactericidal activity of the uterus during the first 4 hours of induced *Escherichia coli* infection in rabbits. Estrogen stimulated the clearance of *Esch. coli* cells from the uterine lumen. The hormones apparently influenced the uterine defenses through an effect on the leukocytic response. Progesterone inhibited the response and estrogen stimulated it.—[*H. W. Hawk, G. D. Turner, and J. F. Sykes: The Effect of Ovarian Hormones on the Uterine Defense Mechanisms During the Early Stages of Induced Infection. Am. J. Vet. Res., 21, (July, 1960): 644-648.*]

Indirect Hemagglutination Test for Salmonella

In order to improve the reliability and storage quality of erythrocyte preparations, procedures were developed to: (1) detect abnormal blood cells associated with the avian leukosis complex (by their prolonged sedimentation rate after washing but before sensitization), (2) select optimum antigen strains (on the basis of those giving low nonspecific but high specific titers), and (3) stabilize sensitized erythrocytes by formalinization. The addition of formalin (4% final volume) to 10% suspensions of sensitized erythrocytes yielded cells that were stable at 5 C. for up to 1 year.—[*J. McN. Sieburth: Stable, Standardized, Sensitized Chicken Erythrocytes for the Polyvalent Salmonella Indirect Hemagglutination Test. Am. J. Vet. Res., 21, (Nov., 1960): 1084-1089.*]

Rapid Serologic Test for Rinderpest

Mesenteric, mandibular, and prescapular lymph nodes were collected from cattle infected with Kabete 0, Pendik, and Pak Chong (Buffalo) strains of rinderpest virus.

Antigen suitable for complement-fixation (CF) and agar-diffusion tests was extracted from these nodes by high-speed homogenation and differential centrifugation. Nodes were obtained 4 to 10 days after infection and up to 12 hours after death.

Serum for the CF test was obtained from rabbits inoculated with the Nakamura III strain of lapinized rinderpest virus.

Significant fixation of complement was obtained in one hour by both antigen-dilution and complement-dilution CF procedures. —[*S. S. Stone and W. M. Moulton: A Rapid Serologic Test for Rinderpest. Am. J. Vet. Res., 22, (Jan., 1961):18-22.*]

Effects of Parathion on Erythrocyte Cholinesterase

The relationship of symptomatology to the rate and degree of erythrocyte cholinesterase inhibition was investigated in pigs. It was found that the production of clinical signs by parathion was dependent upon the rate and degree of depression of erythrocyte cholinesterase rather than primarily upon the degree of inhibition. Chronic parathion poisoning caused complete inhibition of erythrocyte cholinesterase without concurrent skeletal muscle paralysis necessarily occurring. Conversely, acute poisoning pro-

ducted acute paralytic symptoms without complete inhibition of erythrocyte cholinesterase. Neither the acute nor the chronic effects of the compound on plasma cholinesterase could be related to clinical signs.—[*W. T. Oliver and H. S. Funnell: Correlation of the Effects of Parathion on Erythrocyte Cholinesterase with Symptomatology in Pigs. Am. J. Vet. Res., 22, (Jan., 1961):80-84.*]

Method of Testing Anti-Coccidial Agents

A simplified, expedient method for the testing of anti-coccidial agents differs from the standard drug admixture technique in that birds are given daily oral doses for 5 days. This direct dosage technique allows the housing of numerous birds in a limited space, thus facilitating the testing of large numbers of chemical substances. Active drugs can be selected by this method if proper control standards are used.—[*J. E. Lynch: A New Method for the Primary Evaluation of Anti-Coccidial Activity. Am. J. Vet. Res., 22, (March, 1961):324-326.*]

New Books

The Infectious Diseases of Domestic Animals

The 4th edition of this book follows the same plan of presentation used in previous editions. However, nearly every part has been revised to bring it up to date. Probably the most radical innovation in this edition is the treatment of the nature of viruses in regard to whether they are living or nonliving agents. Like previous editions, the new edition is one of our most comprehensive and authoritative works on infectious diseases of domestic animals. It will serve as a useful text and reference work for the student, the research worker, and the practicing veterinarian.—[*The Infectious Diseases of Domestic Animals with Special Reference to Etiology, Diagnosis, and Biologic Therapy. By William Arthur Hagan and Dorsey William Bruner. 4th ed. 1,033 pages; illustrated. Comstock Publishing Associates, Ithaca, N.Y., 1961. Price $11.50.*]

Medical Entomology

The original manuscript for this book was prepared about 50 years ago and has been up-dated by the senior author for the first 4 editions. This 5th edition was prepared by the junior author but follows the plan of presentation employed in the preceding editions. Some material has been reduced or deleted in order to strengthen the more purely medical entomologic aspects of the work without increasing its size. The addition of some keys in anatomic material should serve to broaden the usefulness of the text, particularly in application to laboratory work. Unfortunately, the veterinary aspects of the subject have been further reduced because they have become such a large subject in themselves. The book is a useful text and reference work for veterinarians, students, and research workers.—[*Medical Entomology. By William B. Herms and Maurice T. James. 5th ed. 616 pages; illustrated. MacMillan Co., New York, N.Y., 1961. Price $12.50.*]

The AVMA Executive Board Acts

The Executive Board of the AVMA met in Chicago, April 6-7, 1961. Important actions taken by the Board at this meeting:

Research Trust

The Board received and approved the report of the trustees of the AVMA Research Trust Fund. It was reported that $32,900 will be made available for AVMA fellowships in the year 1961-1962. This money will support renewals of 2 current fellowships and the support of 7 additional fellows.

Legislation

The AVMA Executive Board again expressed its support of the Humphrey Bill and the Andrews Bill (S. 1393 and H.R. 2451). These bills call for amendment of the Public Health Service Act to authorize a 10-year program of grants for construction of veterinary medical educational facilities. The bills provide for $25 million over a period of 5 years for expansion of existing schools, and $10 million for the construction of new schools over a 10-year period.

Nominations

There will be 11 council membership vacancies to be filled at the convention in August. At this recent meeting of the Executive Board, nominations of men to fill these positions were accepted. The election of the veterinarians nominated by the Executive Board to council membership will be an order of business at the meeting of the AVMA House of Delegates in August.

There were 20 nominations made to fill the 11 vacancies. In 5 cases, the nominations were for re-election of council members to their councils when their term expires.

The 5 men nominated for re-election are: Drs. Clyde F. Cairy (ISU '36), Council on Biological and Therapeutic Agents; H. J. Stafseth (MSU '17), Council on Education, representing Public Health; H. L. Marsh (ISU '43), Council on Education, representing Large Animal Practice; C. L. Campbell (OSU '45), Council on Public Health and Regulatory Veterinary Medicine; and H. G. Geyer (OSU '36), Council on Public Health and Regulatory Veterinary Medicine.

Others nominated for council membership are: Drs. James H. Gillespie (UP '39), Council on Biological and Therapeutic Agents; L. A. Griner (COL '49), Council on Biological and Therapeutic Agents; Paul A. Klavano (WSU '44), Council on Biological and Therapeutic Agents; Martin P. Hines (OSU '46), Council on Education, representing Public Health; Edwin A. Churchill

Seated at the head of the table at the Executive Board meeting were: Drs. S. F. Scheidy, past-president; E. E. Leasure, president; J. O. Knowles, chairman, Executive Board; H. E. Kingman, Jr., executive secretary; and M. L. Morris, president-elect.

Executive Board members shown here are: Drs. M. L. Morris, Dan J. Anderson, District VIII; Vyrle D. Stauffer, District IX; Joseph M. Arburua, District X; Clifford A. Bjork, District XI; J. A. Henderson, District XII; and C. M. Rodgers, vice-president.

At work in this picture are: Drs. Niel W. Pieper, chairman, Advisory Committee of the House of Delegates; C. Edwin Hofmann, District VII; Don H. Spangler, District VI; and E. A. Woelffer, District V.

Shown here are: Drs. Don H. Spangler, E. A. Woelffer, H. B. Roberts, District IV; Mark W. Allam, District II; Myron G. Fincher, District I; and S. F. Sheldy.

(UP '41), Council on Education, representing Large Animal Practice; E. C. Stone (WSU '42), Judicial Council; Charles H. Ozanian (OSU '38), Judicial Council; A. G. Boyd (MCK '18), Council on Public Health and Regulatory Veterinary Medicine; C. K. Whitehair (KSU '40), Council on Research; R. L. Kitchell (ISU '43), Council on Research; John T. McGrath (UP '43), Council on Research; Harry Magrane (TEX '43), Council on Veterinary Service; Ernest L. Stearly (UP '33), Council on Veterinary Service; Horace Barron (TEX '41), Council on Veterinary Service; and John W. Thimmig (COL '37), Council on Veterinary Service.

Amendments

The Executive Board received a report on amendments to the AVMA Constitution and Bylaws from its committee on Constitution and Bylaws. Briefly, the committee recommended that: a separate section on regulatory veterinary medicine be established at annual meetings; voting power of constituent associations (other than the National Association of Federal Veterinarians) be determined by AVMA membership in the states; provisions be made to include a membership class of affiliate members for those engaged in veterinary research and teaching who do not qualify for admission as active members; dues exemption be allowed to 35-year members of the Association who have retired from veterinary activity and have requested exemption; Army and Air Force representatives to the AVMA House of Delegates should be selected by the assistants for veterinary service of the surgeons general; Cuban representation in the House of Delegates be withdrawn; attendance at executive meetings of the House of Delegates be limited to members and such administrative employees of the Association and House as deemed necessary; officers of the Association, except the executive secretary and treasurer, shall be elected by the House of Delegates.

The committee has prepared an amendment requesting that membership in constituent associations shall be a requisite for membership in the AVMA. However, the Executive Board voted to forward an unfavorable recommendation on this amendment.

Allied Organizations

The development of a procedure for the affiliation of allied organizations with the AVMA was called for by the Executive Board. The Board requested the Committee on Constitution and Bylaws to work with AVMA councils and allied organizations toward this end.

Pet Hospitalization

The Executive Board concurred with the recommendations of the AVMA insurance consultants, Mass Insurance Coverage Administrators, on the matter of an AVMA-sponsored pet hospitalization plan. MICA recommended that AVMA not attempt to set up such a plan at the present time.

Foreign Veterinary Graduates

The Board discussed the problems associated with the establishment of an education-

al commission for foreign veterinary graduates. It was agreed that a comprehensive report on the status of foreign veterinary graduates presently residing in the United States and Canada was needed. The Council on Education was requested to compile the report.

The AVMA career recruitment program was adopted by the Board and is now underway.

AVMA Staff Reports to Executive Board

The Executive Board also heard reports from AVMA staff members. Following are excerpts from the reports given and pictures of AVMA staff members presenting them.

Executive Secretary-Treasurer

Maintaining a balance between expanding activities and budget limitations is never easy. Thus far this fiscal year (9 months), we have greatly expanded our committee activities; the prospectus, the economic survey, and the study on pet hospitalization insurance plans are extras not provided for when the budget was drafted a year ago. We have had a special meeting of the Executive Board, a secretaries conference, and are now planning a conference of public relations people from state associations. There appears to be no way we can avoid exceeding the amount provided for in the budget. Fortunately our income in form of dues, subscriptions, advertising, and convention receipts will exceed our budget estimates and we are striving hard to end the year without having disbursement exceed actual income. In fact, we would hope that the practice of the previous several years of increasing our investments and total assets will again be possible.

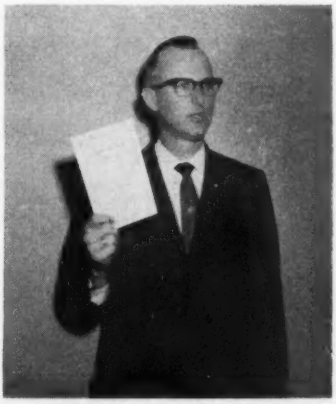
Dr. H. E. Kingman, Jr., executive secretary, treasurer

Publications

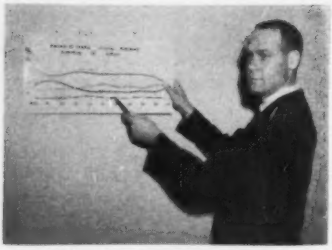
The percentage of articles in the JOURNAL dealing with large animals, small animals, and poultry remains unchanged from the previous 7 years. However, in 1960 a trend that began in 1959 became more pronounced. This trend is characterized by an increase in the number of articles dealing with pet animals and a decrease in the number of articles dealing with large animals and poultry. In 1950, only 17% of our articles were concerned with pet animals; in 1959, 31% were; and in 1960, 37% were.

Beginning with the February 15 issue, the production schedule of the JOURNAL news section was reduced to a 2-week basis from the former 6-week basis. This makes it possible to publish news while it is still current. The news section will contain either 16 or 24 pages per issue. To emphasize the news section, it is being printed on buff-colored paper.

The format of the title pages of *A.J.V.R.* articles will be "modernized" effective with the July, 1961, issue. Titles and by-lines will be arranged "flush left" and summaries will appear at the beginning of the articles in bold, easy-to-read



Dr. Donald A. Price, editor-in-chief



Dr. Arthur Freeman, assistant editor

Publications—*continued*

type. Beginning with the January, 1961 issue, a footnote on this page indicates the date on which the manuscript was received for publication.

The *AVMA Style Guide*, published in 1955 and reprinted in 1957, has been revised and will be published in July or August. The publication, in 1960, of a *Style Manual for Biological Journals* by the American Institute of Biological Sciences gave impetus to our own efforts to revise the *AVMA Style Guide*. At first, it was hoped that we could adopt in toto the *SMBJ*, as did many journals, but it became evident that we could not do this. We did, however, revise AVMA style in accordance with *SMBJ* in all but a few instances.

Dr. L. Meyer Jones, director of scientific activities

Scientific Activities

During this session of Congress the Griffiths Bill (H.R. 1937) and the Moulder Bill (H.R. 3556) have been introduced in the House. They deal with some problems relating to humane treatment of experimental animals. Much time has been given to study of these bills to determine the position the AVMA should take. It is recommended here that the AVMA join other health organizations in opposing the proposed legislation for this session of Congress. All 24 national health organizations represented on the National Committee for Progress in Medical Research are opposed to the bills.

Mr. Heinz R. Kuehn, director of public information

Public Information

There is an urgent need for public relations material designed to increase the scope and effectiveness of veterinary public relations on the state and local level. Equally necessary is the dissemination of information about the affairs of organized veterinary medicine to the public, to the veterinary press, and to special groups. As a first step in introducing the mass communications media to the activities of veterinary medicine, the department of public information has begun to compile material for a comprehensive data sheet to be sent to newspapers, radio and television stations, professional and consumer publications, public and academic libraries, science writers, and opinion leaders. Accompanying the data sheet will be a special memorandum to editors offering the assistance of the AVMA in the preparation of articles and stories on veterinary medicine, and outlining a number of story ideas.

Membership Services

There is a great need to weld the AVMA membership together through continuing programs of information on association affairs. Members want to know not only what is happening, but what it means to them as individuals. . . . Full automation of the records department will provide us with the means for increased communication with members of the profession. Expanded membership services projects and coordinated programs of membership promotion and retention will help us to become a stronger and more united organization.

Mr. Richard D. Morrison, administrative assistant

Business Manager

The basic function of AVMA's business manager is to be responsible to the executive secretary for control of the Association's income and expenses in conformance with the annual budget; and to assume the functions and responsibilities related to advertising and convention management.

Mr. R. G. Rongren, business manager

Professional Relations

The 2nd Annual Conference for Constituent Association Secretaries was handled by this department, and was held Nov. 5-6, 1960, with most Executive Board members in attendance. The theme was "Communication with the Member." Approval was requested of the Executive Board to proceed with the development of plans for a 3rd such conference in the fall of 1961. Several meetings and conferences related to agriculture have been attended during 1960. Some of the major groups have been as follows: 3rd Annual Swine Industry Conference, 10th annual National Institute of Animal Agriculture, 42nd annual National Association of State Departments of Agriculture, 64th annual United States Livestock Sanitary Association, National Mastitis Council, and Livestock Conservation, Inc. Four films have been added to the film library in 1960—2 on leptospirosis, one on ticks, and one on fallout and agriculture. The 59 films in the library had 320 showings in 1960. Staff Consultation was given to the Councils on Education, Public Health and Regulatory Veterinary Medicine, and Veterinary Service. Two meetings were held by each of these councils and 5 school inspections were performed by the Council on Education.

Dr. James R. Hay, director of professional relations

AVMA Goes to Washington

AVMA representatives went to Washington April 11-12, 1961, to make known in the nation's capitol the views and needs of the the veterinary profession.

Foremost on the agenda for the 2-day trip was a meeting with Secretary Abraham Ribicoff, of the U.S. Department of Health, Education, and Welfare.

At this meeting, AVMA representatives urged that the Department of Health, Education, and Welfare take a firm position in opposing the passage of Cooper-Griffith-type legislation. In a memorandum presented to the Secretary they stated, "We are fully in accord with proper handling and maintenance of experimental animals but object strenuously to the interference with research that would result by enactment of the Griffiths (H.R. 1937) or Moulder (H.R. 3556) bills as presently written."

Support by the Department of the Humphrey Bill (S. 1393) and the Andrews Bill (H.R. 2451) was requested by AVMA. These bills call for an increase in funds available for the expansion of veterinary medical educational facilities. They provide for $25 million over a period of 5 years for expansion of existing schools, and $10 million for the construction of new schools over a period of 10 years.

Other legislative matters discussed with Secretary Ribicoff by the group were AVMA's objection to the Delaney clause, which the Association believes interferes with scientific judgment in interpreting and administering the regulations regarding food additives in animal feeds; and the need for more adequate legislative protection against the dangers of indiscriminate use of pharmaceutical and biological products in the livestock industry.

AVMA representatives also urged the appointment of a chief professional (veterinary) officer to act as a staff advisor to the Surgeon General on national and international matters of veterinary public health.

It was stated that the AVMA is pleased with the formation and the activities of the Food and Drug Administration-AVMA Liaison Committee and wishes to strongly support this program. It was suggested that the Division of Veterinary Medicine, FDA, would profit from the advice of consultants in the solving of special problems, because such consultants could provide specific and expert knowledge which the Liaison Committee could not. The AVMA offered its assistance in making such expert help available.

Representing the AVMA were Drs. E. E. Leasure, AVMA president; M. L. Morris, president-elect; J. O. Knowles, chairman of the Executive Board; J. A. McCallam, Washington representative; and H. E. Kingman, Jr., executive secretary.

Representatives See Welch

While in Washington, AVMA representatives also met with Assistant Secretary Frank J. Welch, of the U.S. Department of Agriculture. They pointed out to him that there are 1,700 veterinarians employed in the USDA and said they feel too little emphasis is put on the role of veterinarians in agriculture. They urged USDA to consider giving federal veterinarians higher pay and grade ratings, greater incentives, and more recognition. They asked him to consider the possibility of establishing a veterinary division within agriculture to bring together all veterinary activities.

During the meeting, Assistant Secretary Welch stated his concern over Cooper-Griffith-type legislation and said perhaps a joint committee of USDA and AVMA is needed to work together toward solving mutual problems.

Hog Cholera Eradication Program Urged

AVMA representatives, national farm organization representatives, and Assistant Secretary Welch met April 12, 1961, to discuss the problem of hog cholera eradication.

Organizations represented were the National Grange, the American Meat Institute, the National Council of Farmer Cooperatives, and the American Farm Bureau Federation. The group presented to Assistant Secretary Welch a resolution urging the USDA to work toward the eradication of hog cholera.

The resolution contained the programs for eradication suggested by the national farm organizations and Livestock Conservation, Inc. AVMA support of these programs has been endorsed by the Council on Veterinary Service.

Hog Cholera is estimated to cause a $25-35

million annual loss in swine and requires some $25 million a year for preventive vaccination. Annual potential of foreign markets that now prohibit or restrict the importation of U.S. pork because of hog cholera is $60-70 million, according to USDA.

Livestock Conservation, Inc., feels that complete eradication of hog cholera could be accomplished within 5 to 10 years at a total cost of $45 million.

In a memorandum recently sent by AVMA to its constituent associations, it was stated that the AVMA's Council on Veterinary Service recognizes the recommended eradication program's "usefulness for the nationwide eradication of hog cholera," and that the Council "urges all constituent veterinary medical associations to familiarize their entire membership with the program and to support its adoption and execution.

AVMA Officers and Staff Report on Meetings Attended

As many as 33 meetings will have been covered by AVMA officers, staff members, or representatives in the period between between March 1 and June 1, 1961. Some of the meetings were held in Chicago, others were held elsewhere across the country.

Here's a list of the activities during this period:

March 3-6 *Hip Dysplasia Panel,* Chicago, Ill., Dr. J. R. Hay

March 12-13 *Council on Research,* Chicago, Ill., Dr. L. M. Jones and council

March 14-16 *National Health Council,* New York, N.Y., Mr. H. R. Kuehn

March 16-17 *National Board (Examination Committee),* New York, N.Y., Dr. H. E. Kingman, Jr.

March 19-21 *Alabama V.M.A.,* Montgomery, Ala., Dr. J. O. Knowles

March 20-21 *Council on Education,* Kansas State University, Manhattan, Kan., Visitation Team and Dr. J. R. Hay

March 21 *Texas A. & M. Student Chapter,* College Station, Texas, Dr. J. E. Greene

March 24 *Panel on Bull Evaluation Code,* Chicago, Ill., Dr. J. R. Hay

March 23-24 *Council on Biological and Therapeutic Agents,* Chicago, Ill., Dr. L. M. Jones and council

March 24 *Germ-Free Animal Conference,* East Lansing, Mich., Dr. Arthur Freeman

March 27-28 *Council on Veterinary Service,* Chicago, Ill., Dr. J. R. Hay and council

March 27-28 *Judicial Council,* Chicago, Ill., Dr. H. E. Kingman, Jr., and council

April 4 *British Newcastle Disease Study Commission,* Chicago, Ill., Drs. H. E. Kingman, Jr., D. A. Price, and L. M. Jones

April 5-7 *AVMA Board of Governors and Executive Board,* Chicago, Ill., officers and staff

April 8-9 *Council on Education,* Chicago, Ill., Dr. J. R. Hay and council

April 10 *Rotary Club,* Manhattan, Kan., Dr. M. L. Morris

April 11-12 *USDA, Secretary of Agriculture's Office, HEW, Secretary's Office,* Washington, D.C., Board of Governors, Dr. H. E. Kingman, Jr., and Brig. Gen. (ret.) J. A. McCallam

April 13-15 *AMA Medico-Legal Symposium,* Louisville, Ky., Mr. R. D. Morrison

April 14 *National Institutes of Health Midwest Regional Meeting,* Kansas City, Mo., Dr. L. M. Jones

April 18-21 *AAHA-AVMA Meeting,* St. Louis, Mo., Board of Governors

April 18 *Civil Defense Meeting,* Madison, Wis., Dr. Arthur Freeman

April 18 *National Academy of Sciences-National Research Council Meeting on Interstate Shipment of Laboratory Animals,* Washington, D.C., Dr., L. M. Jones

April 19 *Committee on Local Arrangements, Detroit Convention,* Detroit, Mich., Mr. R. G. Rongren

April 20 *Livestock Conservation, Inc., Executive Committee,* Chicago, Ill., Dr. H. E. Kingman, Jr.

April 22 *Convention Planning Session,* Detroit, Mich., Drs. H. E. Kingman, Jr., D. A. Price, Arthur Freeman, and Mr. R. G. Rongren

April 24-25 *Council on Public Health and Regulatory Veterinary Medicine,* Chicago, Ill., Dr. J. R. Hay and council

April 24 *Convention Arrangements, 1962,* Miami Beach, Fla., Mr. R. G. Rongren

April 29-30 *Fourth Annual Florida Conference,* Gainesville, Fla., Dr. M. L. Morris

May 2 *University of Minnesota Student Chapter,* St. Paul, Dr. C. H. Cunningham

May 4 *University of Illinois Student Chapter,* Urbana, Ill., Dr. R. Getty

May 5-6 *Second AMA Regional Rural Health Conference,* Salt Lake City, Utah, Dr. M. Hines

May 8-13 *Facilities Check, 1965 Convention,*

Los Angeles, Calif., Las Vegas, Nev., and Portland, Ore., Mr. R. G. Rongren

May 11 *National Science Fair*, Kansas City, Mo., Mr. H. R. Kuehn, Drs. E. E. Leasure, C. R. Smith, G. T. Edds, M. L. Morris

Dr. L. Meyer Jones Accepts Industry Position

Dr. L. Meyer Jones (ISU '39), AVMA director of scientific activities, has resigned effective May 15, 1961, to accept a position as vice-president of Standard Chemical Manufacturing Company, Omaha, Neb.

Dr. Jones joined the AVMA staff in March, 1960. He served as staff consultant to the Council on Research and to the Council on Biological and Therapeutic Agents and as assistant editor of the *American Journal of Veterinary Research*.

Dr. L. Meyer Jones

Dr. Jones was the first fellow of the Research Council of the AVMA. He has been active in affairs of the AVMA, having served as a member and as chairman of the Council on Biological and Therapeutic Agents, on the Post-War Planning Group, and on the National Formulary Committee on Veterinary Items.

He is a former professor of the Department of Veterinary Physiology and Pharmacology at Iowa State University. He served as Fulbright Lecturer in Pharmacology in 1953 to 1954 at the Tierarztliche Hochschule in Vienna, Austria. He is the author of a textbook "Veterinary Pharmacology and Therapeutics," now in its second edition, and has been author or co-author of many articles in scientific journals.

Southern Animal Disease Research Workers Elect New Officers

Officers of the Animal Disease Research Workers in the Southern States elected at the organization's 15th annual meeting, College Station, Texas, April 6-7, 1961, are: Drs. A. L. Kleckner (GA '53), Athens, Ga., president; J. H. Drudge (MSU '43), Lexington, Ky., vice-president; and D. A. Porter, USDA Regional Laboratory, Auburn, Ala., secretary-treasurer.

A program of 31 scientific papers was presented at the 2-day meeting.

Veterinary Medicine Stages Session at Public Health Meeting

Veterinary Public Health was the subject of a demonstration-exhibit staged at the annual convention of the Middle States Branch of the American Public Health Association in Chicago, Ill., April 12-14, 1961. The overall theme of the three-day meeting was "Manpower and Training to Meet Public Health Emergencies."

The Veterinary Public Health session was held twice during the meeting. Dr. C. A. Brandly (KSU '23), dean of the College of Veterinary Medicine, University of Illinois, presided. Topics covered were "Interrelations Between the Diseases of Animals and the Acute and Chronic Diseases of Man," by James H. Steele (MSU '41), chief of the Veterinary Public Health section, Epidemiology Branch, Communicable Disease Center, Public Health Service, Atlanta, Ga.; "Approach to Identification and Solution of Zoonotic Disease Problems," by James Lieberman (MID '44), assistant chief of the training branch and chief of the Audiovisual Section, Communicable Disease Center, Public Health Service, Atlanta, Ga.; and "Veterinary Public Health Problems in Emergencies," by Frank A. Todd (ISU '33),

assistant to the administrator, USDA, Washington, D.C.

Also appearing on the program at the meeting was AVMA's director of public information, Mr. Heinz R. Kuehn. Mr. Kuehn participated in a round-table discussion entitled "Are the Old Time Virtues New Time Needs?: Self-Reliance and Personal Responsibility."

The veterinary medicine program was one of 8 such sessions put on by various groups in public health. These demonstration-exhibits as well as general convention business and discussion and workshop sessions completed the convention program.

Needs of Research on Nutrition of Horses Outlined

Research needs in the field of nutrition for horses were outlined by a group of veterinarians, animal nutrition specialists, and horsemen in Denver, March 6.

The meeting was sponsored jointly by the Morris Animal Foundation and the American Quarter Horse Association. During the 2-day session, guidelines for a broad research program were drafted. Subjects considered were: the measurement of digestibility of common feeds; development of a purified diet; physiology of the digestive system; biological evaluation of protein; determination of energy, mineral, and vitamin requirements; the effect of nutrition on growth; and the evaluation of nutrition in reproduction.

Attending the meeting were: Drs. Mark L. Morris (COR '26), AVMA president-elect and president of the Morris Animal Foundation; Rue Jensen (COL '43), dean of the School of Veterinary Medicine, Colorado State University; Brig. Gen. Wayne O. Kester (KSU '31), director of professional education, Morris Animal Foundation; Imogene Earle, animal nutrition specialist, USDA Research Center, Beltsville, Md.; R. M. Forbes, professor of animal nutrition, University of Illinois; John E. Loosli, professor of animal nutrition, College of Agriculture, Cornell University; and Mr. Ed H. Honnen, chairman, American Quarter Horse Association Research Committee.

Ralston Purina Announces Fellowship Winners

Ralston Purina Company, St. Louis, Mo., has announced the names of its 10 research fellowship recipients.

Of the 10 fellowships awarded, one was for advanced study in veterinary medicine. Two veterinarians received awards. They are: Drs. Ralph D. McQueen (ILL '54), for advanced study in veterinary medicine at the University of Illinois; and Nugawilage D. Nugara, who received his D.V.M. degree from the University of Ceylon, for advanced study in poultry husbandry at Oklahoma State University.

This is the 13th year that Ralston Purina has sponsored a fellowship program. Each award is for $2,000. Applicants are evaluated on the basis of scholastic record, proposed research project, recommendations, and other pertinent data. Dr. W. A. Hagan (KSU '15), National Animal Disease Laboratory, Ames, Iowa, is AVMA's representative on the Ralston Purina Awards Committee.

Outlining equine nutrition research needs are Dr. R. M. Forbes, University of Illinois; Dr. Mark L. Morris; Dean Rue Jensen, Colorado State University; Dr. John K. Loosli, Cornell University; Dr. Imogene Earle, USDA Research Center, Beltsville, Md.; Brig. Gen. Wayne O. Kester, Denver; and Mr. Ed H. Honnen, Denver.

Veterinarians Participate on Rural Health Program

Two veterinarians are scheduled to appear on the program of the 2nd Regional Rural Health Conference, Inter-Mountain States, sponsored by the American Medical Association, May 5-6, 1961, Salt Lake City, Utah.

They are Dr. Martin P. Hines (OSU '46), Raleigh, N. Car., who will discuss "Agricultural Chemicals, Additives, and Antibiotics," and Dr. James Lieberman (MID '44), Training Branch, Communicable Disease Center, Atlanta, Ga., who will discuss "Animal Diseases and Human Health."

The program, entitled "Community Resources for Health," will be staged for the states of New Mexico, Colorado, Montana, Wyoming, Idaho, Arizona, Nevada, and Utah.

Drs. Hines and J. L. McAuliff (COR '18), Cortland, N.Y., are members of the advisory committee to the AMA Council on Rural Health.

Ultrasonic Diagnostic Techniques Studied

The use of ultrasonic techniques to study diseases in dogs is under way in a research study at the University of Colorado Medical Center, Denver.

The technique is based on sonar and radar principles and employs a pulse echo system. Echoes from different types of tissue within the body are recorded and shown on a screen. Those conducting the study hope it will assist in the delineation between normal and diseased tissues in such organs as the liver, kidney, and muscles which presently cannot be checked by radiographic techniques.

Dr. Robert W. Kirk (COR '46), professor of small animal medicine of the School of Veterinary Medicine, Cornell University, has taken a year's leave of absence to conduct the study at the Medical Center. It is being sponsored by the Morris Animal Foundation.

Dr. L. G. Berg Promoted

Dr. Leo G. Berg (KSU '43) has been named veterinarian in charge of the Charleston, W. Va., Animal Disease Eradication Division station, USDA. He was formerly assistant veterinarian in charge, Harrisburg, Pa.

Dr. Leo G. Berg

After graduation from veterinary college, Dr. Berg worked for the State of Illinois until September, 1943, when he entered the Army Veterinary Corps and served as meat and dairy products inspector. After discharge from the Armed Forces in 1946, he was in general practice in Kansas until January, 1948, at which time he entered federal service in Illinois as an area veterinarian. In 1955 he was promoted to district veterinarian. He participated in the 4th Veterinary Administrator Training Program, and in June, 1958, was appointed assistant veterinarian in charge, Harrisburg, Pa., in which capacity he remained until his appointment to the Charleston, W. Va., station. He has also received training in radiologic defense and radiologic monitoring.

Dr. Berg is a member of the National Association of Federal Veterinarians.

Dr. J. A. King Goes to Alaska Station

Dr. Jack A. King (COL '38) has been appointed veterinarian in charge of the Anchorage, Alaska, Animal Disease Eradication Division station, USDA. He was formerly district supervisor, Phoenix, Ariz.

He entered federal service with the for-

Dr. Jack A. King

Dr. Gilbert H. Wise

mer Bureau of Animal Industry in June, 1938, and performed duties in New Mexico and Arizona until November, 1940. From November, 1940, to May, 1946, he served with the U. S. Army Veterinary Corps. After discharge from the Army, he maintained a large animal practice in Colorado from December, 1946 to February, 1948. He returned to federal service with the Bureau of Animal Industry in October, 1948, and worked on interstate inspection at Tovrea, Ariz., until August, 1950. He again maintained a large animal practice in Phoenix, Ariz., from August, 1950, to December, 1952. In January, 1953, he became state veterinarian in Arizona and remained in that capacity until July, 1957, when he reentered federal service in Phoenix, Ariz., where he remained until his transfer and promotion to the Anchorage, Alaska, station.

Dr. King is a member of the AVMA and the National Association of Federal Veterinarians.

Dr. G. H. Wise Assigned to Washington, D.C.

Dr. Gilbert H. Wise (MSU '43) has been named assistant chief staff officer, Program Appraisal, Animal Disease Eradication Division, USDA, effective Feb. 12, 1961. He was formerly assistant veterinarian in charge, Sacramento, Calif.

From 1944 to 1946, Dr. Wise was in the Army Veterinary Corps. He maintained a private practice in Grand Rapids, Mich., his home town, in 1947 and 1948. He entered federal service with the former Bureau of Animal Industry in Michigan in 1949 as an area veterinarian, and was promoted to district veterinarian in 1955. He participated in the 2nd Veterinary Administrator Development Program in 1955 and 1956, and was appointed assistant veterinarian in charge in New Jersey following this training. He was transferred to Ohio in the same capacity in 1957 and to California in 1958 where he remained until his appointment to the Washington, D.C., staff.

Dr. Wise is a member of the AVMA, the National Association of Federal Veterinarians, and the U. S. Livestock Sanitary Association.

Among the States and Provinces

Connecticut

SEMINAR HELD.—A special seminar on lung diseases of animals was conducted for the Connecticut Society of Pathologists by Dr.

S. W. Nielsen (COR '51) at Hartford Hospital, Hartford, Conn., March 2, 1961. A similar seminar discussing the changes which occur in the diseased lungs of animals had been presented at the meeting of the American College of Veterinary Pathologists. Using slides, Dr. Nielsen presented several cases of lung pathology in animals.

Nevada

NEVADA V.M.A. HOLDS WINTER MEETING.—At the recent annual winter meeting of the Nevada V.M.A., the following officers were elected: Drs. John O'Harra (ISU '43), Reno, president; Reece Jameson (COL '53), Las Vegas, vice-president; and Brian Hutcherson (COL '55), Reno, secretary-treasurer.

Speakers at the meeting and their topics were: Dr. Alida P. Wind, University of California School of Veterinary Medicine, "Cushing's Disease Syndrome"; Dr. R. A. Bankowski (MSU '38), University of California School of Veterinary Medicine, "The Changing Animal Viruses"; Dr. K. W. Smith (COL '32), Colorado State University College of Veterinary Medicine, "Herniated Disk Syndrome," Part I "Diagnosis and Conservative Treatment," Part II "Surgical Correction," and "Some Practical Surgical Procedures"; Dr. V. G. Crago (OSU '42), practitioner, Youngstown, Ohio, "Modern Concepts of Veterinary Medicine"; Dr. W. J. Zontine (COL '42), practitioner, Lancaster, Calif., "The Management of Renal Disease in the Dog"; and Dr. A. H. Edmundson (TEX '44), practitioner, Pasadena, Calif., "General Problems in Light Horses."

Dr. Donald Miller (OSU '36), assistant director of the Animal Disease Eradication Division, USDA, Washington, D.C., attended the meeting of federal and state veterinarians the day prior to the Nevada State V.M.A. meeting.

New Jersey

V.M.A. OF NEW JERSEY HOLDS ANNUAL SESSION.—The annual meeting of the Veterinary Medical Association of New Jersey was held March 22 and 23, 1961, in Atlantic City.

Installed as officers of the association were: Drs. John Gray (ONT '24), Newton, president; Owen K. Fox (UP '44), Moorestown, president-elect; Arthur F. North (COR '35), Somerville, vice-president; John R. McCoy (UP '40), East Brunswick, secretary; and Edwin L. Brower (KSU '30), Freehold, treasurer.

Dr. Ousmane Soce Diop, Senegal ambassador to the United States and representative to the United Nations, was a guest speaker at the meeting. Dr. Diop is a veterinarian. He received his professional training in France. He also has been active in the literary world and in politics. The Veterinary Medical Association of New Jersey presented Dr. Diop with an honorary membership in the association.

At the scientific sessions of the meeting, papers ranged from "Fish Pathology" to the diagnosis and treatment of "Diseases of Both Pet and Farm Animals." An entire afternoon was devoted to a symposium on liver disease which began with a discussion of the normal anatomy, histopathology, and physiology of the canine liver and flowed to considerations of clinical diagnosis, radiography, clinical pathology, and postmortem findings. The session ended with the presentation of actual case histories taken from the files of 5 different small animal hospitals.

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NEW JERSEY V.M.A. CO-SPONSORS EPIDEMIOLOGY COURSE.—The Veterinary Medical Association of New Jersey was a co-sponsor of a course in epidemiology last February and March for which 45 veterinarians and 30 health officials enrolled.

The course was held over a 5-week period with one session being conducted each week. The Veterinary Medical Association of New Jersey originated the idea of holding the course. Other co-sponsors were the New Jersey State Department of Health, Rutgers, the State University, and the U.S. Department of Health, Education, and Welfare Communicable Disease Center.

Speakers were provided by the Communicable Disease Center and the state health department.

New York

NEW YORK STATE V.M.S. EXECUTIVE BOARD MEETS.—At the meeting of the Executive Board of the New York State V.M.S., the Board requested individual members to ex-

press their opposition to Cooper-Griffiths-type legislation; approved maintenance of concurrent membership in state societies as a requirement for AVMA membership; and approved attendance of the society's executive secretary at the AVMA public relations round-table in Chicago, May 20-21.

The Board also endorsed recommendations that the association support efforts to secure passage of legislation requiring anti-rabies vaccinations for all dogs in New York State.

A bill to make rabies inoculations compulsory has been introduced in the 1961 New York State Legislature. The bill does not specify the frequency of such inoculations, but would require a certificate of inoculation signed by a registered veterinarian before a dog license could be issued. The Board said that it would endorse the legislation provided the measure could be amended to include requirements for re-vaccination every 3rd year when live-virus vaccine is used and every year when killed-virus vaccine is used.

Pennsylvania

COMPARATIVE MEDICINE THEME AT PENNSYLVANIA CONFERENCE.—Comparative medicine was emphasized in scientific reports presented at the 61st Annual Conference of Veterinarians, January 17-18, at the University of Pennsylvania.

In addition to talks on various health problems of farm animals and household pets, 3 symposiums were held on subjects of importance in both animal and human medicine. Subjects of the symposiums were infertility, inherited diseases, and lymphoid tumors.

Dr. Ludwik Gross, chief of the Cancer Research Institute of the Veterans Administration Hospital, New York, N.Y., and a pioneer in research on virus tumors, presented one of 5 reports at the "Symposium on Lymphoid Tumors in Man and Animals." Dr. Gross, first scientist to show that mouse leukemia is caused by a virus, spoke on "Recent Advances in Leukemia Research."

In the symposium on hereditary disease, Dr. Peter W. Vanace, research associate of the South Jersey Medical Research Foundation and an associate in pediatrics in the Hospital of the University of Pennsylvania, discussed "Snorter Dwarf Cattle and Gargoylism." Snorter dwarf cattle have a disease of the connective tissues believed to be caused by the same hereditary biochemical defect which produces the dwarfed and defective condition known as gargoylism in human beings.

The symposium on infertility was concerned primarily with research findings in the study of cattle. Chief speaker, Dr. Lester E. Casida, professor of genetics at the University of Wisconsin, reported on current research in bovine infertility.

Highlight of the 2-day conference was an address by his excellency, Antonio Carrillo-Flores, Ambassador of Mexico to the United States. Ambassador Carrillo-Flores discussed Mexican-United States relations today. A distinguished jurist and economist, he has been Mexico's leading diplomat in the United States since 1959.

Quebec

VETERINARY ASSOCIATION MEETS.—At a recent meeting of the Society of Veterinary Medicine of the Province of Quebec, Montreal Section, Dr. Henri Troalon (MON '42) discussed the state of the hog cholera epizootic in eastern Canada and the steps being taken to eradicate the disease.

Dr. Troalon said that a large corps of veterinarians from all over Canada has been mobilized to eradicate the diease from Drummond, Bagot, Nicolet, and Yamaska counties. "Strict measures are being taken to arrest the disease which has taken proportions which were not thought possible in the beginning," he said.

Washington

DR. M. A. THOM RECEIVES AWARD.—Dr. Myron A. Thom (WSU '29), Pasadena, Calif., was selected as the first recipient of the John E. McCoy Memorial Fund Award by the faculty of the College of Veterinary Medicine, Washington State University.

The McCoy Memorial Fund was established through contributions by veterinarians, students, and other persons throughout the United States in honor of the late Dean John McCoy of the Washington State University College of Veterinary Medicine. In-

terest accumulations from the fund totaling more than $5,000 are used to bring outstanding lecturers in clinical veterinary medicine to the campus.

Dr. Thom has worked mainly in radiology and small animal medicine. He has written and spoken extensively on radiology and is a lecturer on the subject at the University of Southern California Medical School. He has practiced in Pasadena since 1932.

Dr. Thom was a member of the AVMA Research Council from 1954 to 1957 and president of the AAHA in 1952. He is a member of the Radiological Societies of Southern California and of North America and the American Association of Equine Practitioners.

State Board Examinations

FLORIDA—June 15-17, 1961, Biscayne Terrace Hotel, Miami, Fla. Dr. E. F. Thomas, Secretary, 4937 S. Tamiami Trail, Sarasota, Fla.

GEORGIA—June 15-16, 1961. Atlanta, Ga., Dr. A. M. Mills, Secretary, 325 Pinecrest Dr., Athens, Ga.

IOWA—June 1-2, 1961, Division of Animal Industry, State House, Des Moines 19, Iowa. Dr. A. L. Sundberg, chief Division of Animal Industry, State House, Des Moines 19, Iowa.

MARYLAND—June 5-6, 1961, College Park, Md., 8:00 a.m. Applications must be returned by May 31, 1961. Dr. Harold S. Gober, Secretary-Treasurer, 5400 Park Heights Ave., Baltimore 15, Md.

MASSACHUSETTS—June 19-21, 1961, University of Massachusetts, Amherst. Applications must be filed by June 1, 1961. Dr. Edward A. Zullo, Secretary, Room 33, State House, Boston 33, Mass.

MICHIGAN—June 12-13, 1961, Auditorium. Giltner Hall, Michigan State University, East Lansing, Mich. Applications must be filed 15 days prior to examination along with $25 fee. Dr. John F. Quinn, Corresponding Secretary, 6th Floor, Lewis Cass Building, Lansing 13, Mich.

MISSOURI—June 1-2, 1961, School of Veterinary Medicine, University of Missouri, Columbia, Mo. Dr. L. A. Rosner, Chairman, Box 630, Jefferson City, Mo.

MONTANA—June 12-14, 1961. Helena, Mont. Applications and fee must be received by office by June 1, 1961. Dr. J. W. Safford, Secretary-Treasurer, Capitol Station, Helena, Mont.

NEW HAMPSHIRE—July 5, 1961, State House, Concord, N.H., 9 a.m., Dr. Eric W. Simmons, secretary-treasurer, Exeter Road, North Hampton, N.H.

NORTH CAROLINA—June 21-23, 1961, Morehead-Biltmore Hotel, Morehead City, N.C. Dr. James I. Cornwell, secretary, P.O. Box 9038, Asheville, N.C.

OHIO—June 5-7, 1961, Sisson Hall, College of Veterinary Medicine, Ohio State University, Columbus, Ohio. Dr. H. G. Geyer, Executive Secretary, State of Ohio Department of Agriculture, Division of Animal Industry, Columbus 15, Ohio.

OKLAHOMA—May 24-26, 1961. College of Veterinary Medicine, Oklahoma State University, Stillwater, Okla. Applications must be filed 30 days prior to examination. Mrs. Bonnie Jean Meuffer, 4321 S. Lee, Oklahoma City, Okla.

OREGON—June 6-8, 1961, Hotel Multnomah, Portland, Ore. Application deadline one month prior to examination. Fee $25. Dr. C. R. Howarth, Secretary, 135 N. Highway, St. Helens, Ore.

SOUTH CAROLINA—June 15-16, 1961, Columbia Hotel, Columbia, S. Car. Dr. H. L. Sutherland, Secretary-Treasurer, Union, S. Car.

TEXAS—May 29-31, 1961. School of Veterinary Medicine, A. & M. College of Texas, College Station, Texas. Application deadline one month prior to examination. Mr. T. D. Weaver, Executive Secretary, 207 Capital National Bank Bldg., Austin 1, Texas.

UTAH—June—29, 1961, Department of Business Regulation and Registration, State Capitol Building, Salt Lake City, Utah, 9 a.m. Applications must be filed by June 15, 1961. Fee $15. Dr. Frank Lees, Director of the Office of Business Regulation and Registration, State Capitol Building, Salt Lake City, Utah.

WEST VIRGINIA—June 19, 1961, Capitol Building, Room 117, Charleston W. Va. Dr. H. J. Fallon, Secretary, 200 Fifth St., W., Huntington, W. Va.

WISCONSIN—June 26-27, 1961, Madison, Wis. Dr. A. A. Erdmann, Secretary, 6 W. State Capitol, Madison 2, Wis.

Deaths

Star indicates member of AVMA

W. K. Schalk (ISU '14), 71, Iowa Falls, Iowa, veterinarian for 45 years, died March 1, 1961.

★**J. D. C. Wipf** (MCK '09), 84, Bozeman, Mont., died Feb. 6, 1961, of a heart attack.

Dr. Wipf was responsible for milk sanitation as an employee of the Montana Livestock Sanitary Board. He was a member of the AVMA and a past-president of the Montana V.M.A.

Women's Auxiliary

Auxiliary to the AVMA in Action

The outstanding project for all auxiliaries this year is the AVMA Research Fund campaign. The goal of $75,000 is being solicited by the AVMA auxiliary members from the entire AVMA membership. Every dollar donated during this drive will go into the fund for fellowships without any part of it being used for campaign expenses.

This past year, 63 of the 80 associated auxiliaries contributed to the AVMA Research Fund, and 70 donated to the AVMA Auxiliary Student Loan, Memorial, or Award Funds. In addition to these national funds, many auxiliaries present special awards to veterinary students, maintain student loan funds, and contribute books, instruments, and room furnishings to the veterinary schools.

Some regional groups support service projects, such as the Milwaukee, Wis., regional's donations to the Cosmopolitan Club Charity, which gives aid to persons unable to provide corrective surgery for disfigured children. The Bexar County, Texas, regional group has collected clothing, toys, and books for the patients of the San Antonio State Hospital and the Children's Shelter. The Tarrant County, Texas, regional sponsors the library for the East Texas Indian Reservation. The Southeastern Michigan regional contributes to the Leader Dogs for the blind. Southern California regional has supported Guide Dogs for the blind. The dog and the training for the future owner costs $1,700, and 4 such units have been provided. Seattle, Wash., regional sponsors an award at the Science Fair. Mississippi Valley, Ill., regional has a telephone emergency communication system. In the case of death of a member, or other disaster, everyone in the area can be informed by a chain of calls according to a prearranged schedule.

Student auxiliaries are noted for their service projects, with 16 out of the 18 groups reporting such projects for the Honor Roll. Last year the Colorado student auxiliary made a complete wardrobe for a needy 5-year-old girl attending the state school for the deaf. This year they provided clothing for a farm family with 5 children, 2 of whom had an incurable skin disease. The Missouri sophomore girls collected $215 for the United Fund, and the Purdue girls are canvassing for the Research Fund. Last year the Iowa student auxiliary raised $876 for the wife of a veterinary student who was stricken with polio and confined in an iron lung.

Some of the most successful money-raising projects have been "white elephant" sales, auctions, and bazaars, with hand made items prepared by the members. Christmas cards have been sold for the benefit of the student loan fund. Luncheons with card parties or fashion shows have also proved to be profitable.

The programs planned for state and regional meetings are both entertaining and educational, which stimulates attendance. Subjects cover a wide range of interests, such as psychology and hypnosis; stocks, bonds, and wills; portrait painting and ceramics; travelogues and air travel; slenderizing, hair styling, spring hats, and beauty care; interior decorating, home lighting, and Christmas decorations; book reviews of fiction and nonfiction; and even a musical program presented by veterinarians.

Tours have been arranged to visit historical sights, such as the Lincoln Shrine. There have also been visits to gardens, a copper mine, flour mill, furniture store, silver-plating company, university campus, pharmaceutical plant, and to a TV studio in which the group participated in a pro-

gram which helped acquaint the public with facts about the veterinary profession.

Social functions vary in types and locations. A tea was given at a governor's mansion; another tea honored the charter members; a barbeque was held at a ranch; a smorgasbord and seafood jamboree at a hotel; dinner dance at a country club, and a summer picnic at a lake with all the veterinary families.

To promote attendance and membership, some groups send personal letters of invitation to the wives of all veterinarians in the state. In Nebraska personal visits were made to all nonmembers. In Iowa, after the convention, letters were sent to all those who did not attend, with information about the meeting and an invitation to join. Many state and some regional auxiliaries are now giving complimentary memberships to the wives of the graduating seniors for the balance of the calendar year.

The methods used by the auxiliaries in all parts of the country in fulfilling the objectives of the national auxiliary may vary, but the end results are the same. They give financial support to projects, strengthen the bonds of friendship among women connected with the profession, and assist the parent association in the advancement of the veterinary profession.

s/Mrs. Frank R. Booth, *Retiring President*,
Women's Auxiliary to the AVMA

Iowa

Student Wives Assist Student Chapter.—The Women's Auxiliary to the Student Chapter of the AVMA at Iowa State University assisted the student chapter in cataloging books for the veterinary reading rooms and serving over 450 veterinary alumni attending the annual homecoming luncheon at the university last October.

Serving line at the annual veterinary homecoming at Iowa State University shows student wives busily serving alumni.

Tennessee

Women's Auxiliary Contributes $50, Elects New Officers.—At the annual meeting of the Women's Auxiliary to the

New officers of the Tennessee V.M.A. Women's Auxiliary are (left to right): Mrs. W. W. Williams, Mrs. J. C. Young, Mrs. W. P. Kirkeminde, Mrs. Jay S. Hamilton, and Mrs. H. W. Nance. Mrs. J. Alex Leech, second vice-president, is absent from the picture.

Tennessee V.M.A., the women voted to donate $10 to the AVMA Research Fund, $25 to the AVMA Student Loan Fund, and $15 to the Auburn University Library.

New officers elected at the meeting are: Mrs. J. C. Young, Clarksville, president; Mrs. W. W. Williams, Knoxville, first vice-president; Mrs. J. Alexander Leech, Jackson, second vice-president; Mrs. Jay S. Hamilton, Nashville, third vice-president; Mrs. W. P. Kirkeminde, Crossville, secretary-treasurer; and Mrs. H. W. Nance, Lawrenceburg, historian. Mrs. W. C. Cook will be the association's delegate to the Women's Auxiliary of the AVMA at the convention in Detroit next August.

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IN GENITAL TRACT INFECTIONS FURACIN Suppositories Veterinary—a water-soluble base suppository, containing FURACIN 0.4%; melts at body temperature. Suitable for use in bovine retained placenta.

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NITROFURANS—a unique class of antimicrobials—neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

WHAT IS YOUR Diagnosis?

Make your diagnosis from the pictures below—then turn the page

History.—A female Kerry Blue Terrier, 7 years old, was hit by a car. Immediately she was paraplegic, with the back acutely arched and the front legs extended. The hind legs were flaccid and extended backward when she pulled herself along with the front legs. The dog was anesthetized and radiographs of the spine were taken (fig. 1 and 2).

Fig. 1—Radiograph, ventrodorsal view, of the spine of the dog.

Fig. 2—Radiograph, lateral view, of the spine of the dog.

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Dislocation of the spine between L2 and L3 and fracture of L2.

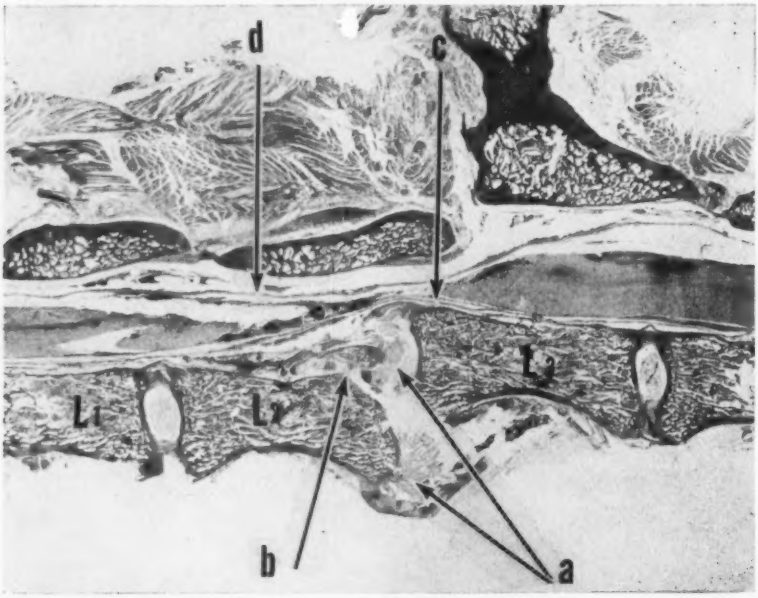

Fig. 3—Histologic section of the spine of the dog. There is rupture of the annulus fibrous (a), fracture of the posterior dorsal lip of the body of L2 (b), dislocation of the body of vertebra L3 (c), compression of the cord (c), and contusion and hemorrhage anterior to the dislocation (d).

Comment.—Spinal injuries in the dog resulting from contact with moving vehicles are usually of the fracture-dislocation type. If the cord is severely damaged, paraplegia is permanent. Euthanasia may be advisable. The lesion is usually in the lumbar area, and the damaging force usually comes from one side. The lumbar spine has little natural protection and the bodies of the vertebrae are connected only by a series of annular fibrous bands (annuli fibrosi). The joints are amphiarthroses without joint capsules. Since the joints have less resistance to severe injury than do the bony bodies of the vertebrae, the injury is a dislocation more often than a fracture.

In this instance (fig. 3), there was a rupture of the annulus fibrosus (a), fracture of the posterior lip of L2 (b) and compression of the cord by the displacement of L3 (c). Hemorrhage and injury to the cord are visible anterior to the compression (d).

This case was submitted by the staff of the Ruebush Animal Hospital, Silver Springs, Md., and was prepared with the assistance of Wayne H. Riser, D.V.M., M.S., Kensington, Md.

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ORAL SUSPENSION VETERINARY

FOR EQUINE TRACHEOPHARYNGITIS AND URINARY TRACT INFECTIONS

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A completely new oral dosage form, DANTAFUR provides: greatly increased nitrofurantoin concentration ■ enhanced bactericidal effectiveness to include such refractory pathogens as beta hemolytic Streptococcus sp. and Pseudomonas sp., and ■ convenience in dosing the thoroughbred afflicted with "race track cough".

A preliminary field study, in which DANTAFUR was used to treat thoroughbreds with tracheopharyngitis, yielded excellent results. Recovery was obtained in 94% of the cases. Complete relief of signs of coughing and nasal discharge was followed by early return to normal breathing. Average duration of treatment was 6 days. Recurrences were minimal.

Equine practitioners will appreciate the striking ability of DANTAFUR to reverse signs of respiratory embarrassment and bring horses back into training and peak racing performance. As with all nitrofurans, DANTAFUR does not favor the development of resistant bacterial strains, thereby permitting retreatment of stubborn cases.

The effectiveness of DANTAFUR has also been reported in the treatment of bacterial infections of the urinary tract. After a course of treatment with DANTAFUR, given orally to mares with urologic infections, both clinical and bacteriological findings were shown to be negative.

DANTAFUR is an oral suspension containing 15 mg./cc. of nitrofurantoin; in bottles of 1 liter.

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REFERENCES: Teigland, M. B.: Proceedings of the 4th Annual Meeting, Amer. Assn. of Equine Pract., Chicago, Illinois, 1959. Witter, R. S.: Paper read at the Third Regional Conference on the Nitrofurans in Veterinary Medicine, Atlanta, Georgia, January 14, 1960.

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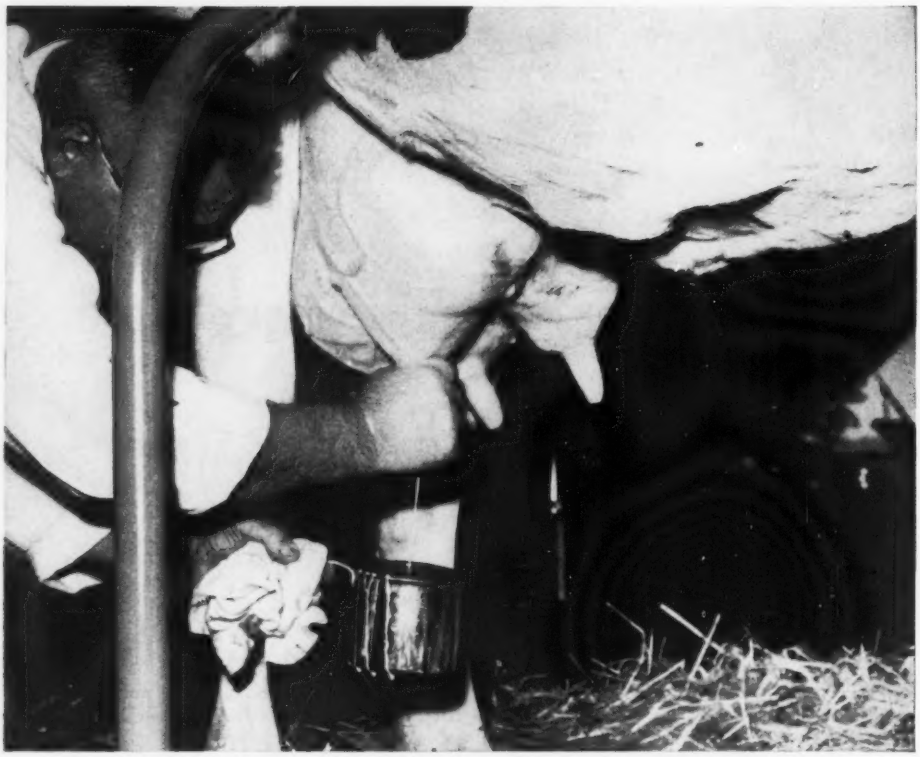

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De Laval milking provides maximum protection to udders to help any mastitis prevention program work better. Here are the reasons why:

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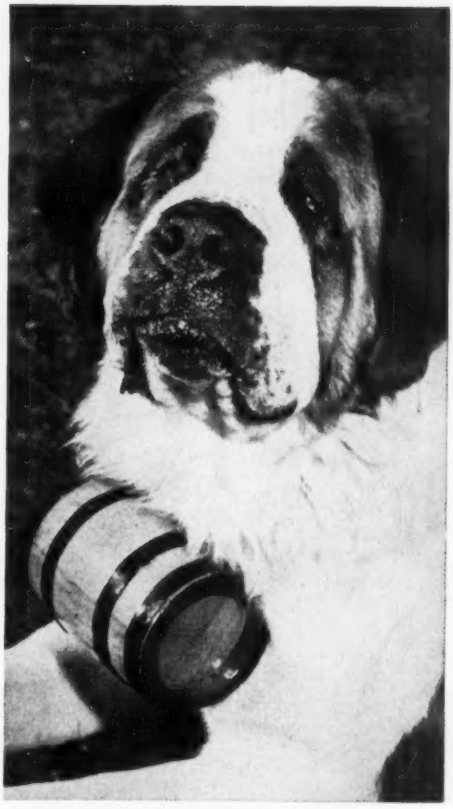

Full line of blood collection, administration, and storage equipment too...

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*Weberlein, M.K., et al.: J.A.V.M.A. *134*:518-519 (June 1) 1959.

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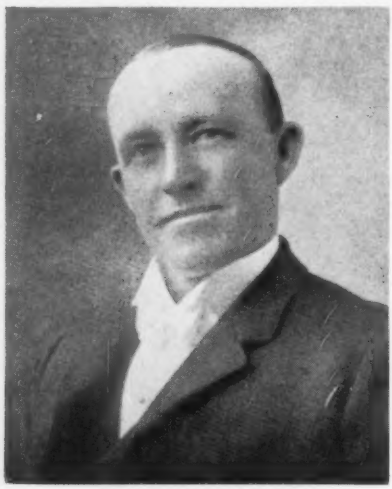
J. F. Smithcors, D.V.M., Ph.D.

History of the AVMA

1910

The first meeting of the Association in the Far West was in 1910 in San Francisco. President A. D. Melvin noted this fact in speaking of ". . . the gratifying growth of our Association, a growth not only in numbers and in territory represented, but in standing and prestige and things accomplished." Regarding legislation before Congress which would have created a Department of Public Health, Dr. Melvin spoke favorably, except for a provision that would have transferred the Bureau of Animal Industry to this new agency. "The Bureau of Animal Industry is essentially an agricultural organization . . . even though some branches of its work have an important bearing on the public health . . . . The production and conservation of the public food supply are of the highest importance to human health, but the measures by which such production and conservation are accomplished are mainly agricultural.



Dr. George H. Glover

Following a preliminary meeting of the Association of Veterinary Faculties and Examining Boards, the program for the first time was distinctly sectioned, with sessions on Medicine, Pathology, Milk Hygiene, and Surgery. A feature of the latter section was an address, reputedly extemporaneous, by L. A. Merillat on "The Present Status of Animal Surgery in America." Never one to mince words, Dr. Merillat charged, "Veterinarians have much less to be proud of as surgeons than they have as workers in some of the other departments of the profession . . . . We have continued year after year to disobey the commonest laws which govern scientific surgical manipulations . . . . We have not attracted the greatest minds of the profession into the surgical ranks." And on the subject of anesthesia, he asks, "To what extent have the veterinarians availed themselves of this great victory over surgical pain? In the large colleges and in the larger hospitals, the spirit of compassion seems to prevail, but in the general practice there are still too many torturing operations performed without due and sufficient regard for the sufferings we inflict."

And on asepsis and hemostasis in surgery, "For twenty years the veterinary profession entirely ignored asepsis . . . [and] we are today knowingly guilty of practicing faulty methods . . . . We have been prone to wade through long bloody dissections, leaving the matter of hemostasis for the last step . . . . Dr. Merillat notes, however, that the profession had come a long way since ". . . the institution of an almost shameful clinic at Omaha in 1898."

An unexpected "feature" of the trip west was the wreck of the "American Veterinary Special" train in the badlands of Montana. Several cars were derailed, but no one was hurt, and the affair took on something of the aspect of a picnic.

G. H. Glover was elected president; C. J. Marshall, secretary; and G. R. White re-elected treasurer.

+ + +

GEORGE H. GLOVER was born in 1864. He received a B.S. degree in agriculture from Colorado in 1884, and the D.V.M. from Iowa State in 1885. After graduation, Dr. Glover spent 12 years as an inspector in Colorado and Montana. Then he practiced for 7 years in Denver, during which time he was also an instructor in the College of Agriculture for a short period. In 1907 he was instrumental in the establishment of the present College of Veterinary Medicine at Colorado State University, and served as dean until his retirement in 1932.

In 1910 he was elected president of the AVMA, the Colorado V.M.A., and the Association of Veterinary Faculties. He was said to have a ready pen and a ready tongue, and could write and speak for lay and professional audiences with equal facility—not only on veterinary topics, but on temperance, politics or theology as well. Dr. Glover died Jan. 11, 1950.

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for fungal, bacterial, and allergic
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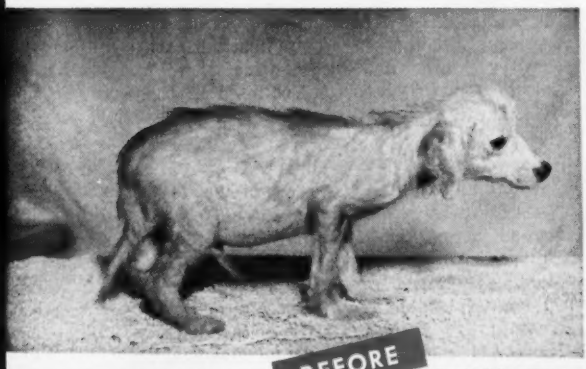

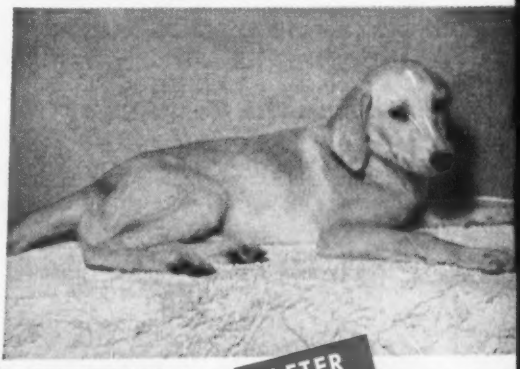

BEFORE

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1. "Clinical Evaluation of a Drug for Dermatoses of Dogs and Cats," Wenger, J. B., Vet. Med., 55:55-58, Mar. 1960.

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Public Relations

Public Information

Missing the Best Bet of the Century

Picture a doctor of veterinary medicine practicing in a mid-western metropolis. He is devoted to his profession beyond the call of income-producing office hours, giving freely of his spare time to the activities of his local association. He is a good citizen who participates in the affairs of his community.

One afternoon he drives downtown to visit a Health Fair which, for the past 2 days, has attracted huge crowds not only from the city itself, but from all parts of the state. On radio, television, and in newspapers, it is *the* local event of the season.

Our veterinarian spends the afternoon at the Fair and upon his return homes writes the following letter to the AVMA:

"I searched the entire exhibit area carefully for 3 or more hours, looking for some exhibit featuring veterinary medicine. All I could find was one small panel in one of the military exhibits, which mentioned the work of the Veterinary Corps in only one of its phases—that of inspection of food of animal origin. Another exhibit, which should have had veterinarians in attendance, was one of the United States Public Health Service exhibits which featured rabies control.

Sponsored by Physicians

"The 'Health Fair' was sponsored by the M.D.'s of the 4 counties in this area, and those exhibits which were not staffed by personnel of the exhibiting organizations were staffed by physicians. When I visited the 'Rabies Control' exhibit the attending M.D. was an 'O.B.-Gyn' specialist who was frank to admit that he knew nothing about rabies or its control.

"This Fair would have been an excellent opportunity to tell of many of the advances in medical science which have been made by the veterinary profession. It was visited by thousands every day, many coming from 'way out in the boondocks.' Each morning was restricted to school children from 6th grade up. From noon 'til the 9 p.m. closing each day it was open to the general public.

"All health professions, except veterinary medicine, were well represented. Veterinary medicine, as represented by the AVMA, is certainly missing out on the best bet of the century public information-wise, if we do not do something to get included in these 'Health Fairs.'"

National Science Fair

What can we do—what *must* we do?

AVMA representatives have just returned from the 1961 National Science Fair-International, held in Kansas City, May 10 to 13. At a Health Awards Banquet sponsored by the American Medical Association, the American Dental Association, the American Pharmaceutical Association, and the AVMA, they presented the AVMA's Science Youth Award to the 2 high school students whose exhibits had been selected from more than one thousand as "highly commendable and original . . . in the biological sciences applicable to the value and health of animals."

But AVMA participation in the National Science Fair-International, which is the culmination of more than 200 state and regional science fairs, is only one small part of what the veterinary medical profession must do to attract the young to the profession.

AVMA Response

In answering the veterinarian whose letter was quoted above, the AVMA director of public information pointed out: "In response to your fully justified remark that veterinary medicine is certainly missing out on the best bet of the century if we do not do something to get included in these 'health fairs,' I should like to quote from my review of the AVMA's public relations program as presented to the AVMA's Board of Governors early this year. In this Review I stated as follows:

"The science fair movement is chiefly of local significance, having its origin and

(Continued on adv. p. 38)

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D. N. P.* Disophenol Parenteral 3.5%**

A solution containing 35 mg. Disophenol per cc. for subcutaneous injection in the treatment of hookworms in dogs.

Dosage is 0.1 cc., per pound of body weight in dogs of all ages. Do not repeat treatment within 14 days.

D. N. P. has a wide margin of safety and, when used at recommended dosage, may be given to severely debilitated dogs with no ill effects. Special pre-treatment preparation is not required; neither is any post-treatment handling needed.

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**Inert ingredients:
Sodium hydroxide 0.38%;
water 50%; polyethylene glycol q.s. 100%.

PR Page—*continued from adv. p. 36*

achieving results on the local level. The department's responsibility lies in encouraging local societies to support and actively to participate in the movement. Science fairs (and the same is true of any kind of health fairs) offer an ideal opportunity to local veterinary associations for developing better relations with their communities, with other local health agencies and scientific groups, civic groups, and high-caliber individuals. Furthermore, it is one of the best ways in which veterinarians can attract superior students to a career in veterinary medicine. The promotion of science fairs, therefore, will be one of the major activities of the department of public information."

State and Local Participation

As a first step toward realization of this AVMA program, the department of public information has prepared a mimeographed list of veterinary science projects exhibited at recent science fairs. The list aims to accommodate in small measure members requesting information and advice on veterinary scientific projects for high school students. It is contemplated to expand this list soon into a kit designed to promote participation in the science fair movement by local and state associations. The kit will contain (a) suggestions on how to participate locally and statewide in the movement, (b) all necessary information on the science fair movement, and (c) a list of suggeested veterinary medical projects for high school students.

Ultimately, however, the success of veterinary participation in science and health fairs will depend on the individual veterinarian's sense of public relations responsibility. Efforts by organized veterinary medicine to stimulate an interest in the profession among children and youth can never replace the motivational impact of the personal relationship between the veterinarian and the people he serves—be they clients, neighbors, or fellow residents of his community. Above all, it is through his contact with the young that he has the first opportunity to create in the mind of the child or youth a lasting image of veterinary medicine. All organized recruitment programs can only supplement and reinforce the veterinarian's personal influence upon his environment.

H. R. Kuehn
Director, Public Information

Scientists Experiment with Electrically-Powered Hearts

Success in the use of artificial machines to temporarily perform the functions of the heart and lungs during surgery has led to an increasing interest in finding an artificial device to replace diseased organs permanently. Experiments recently conducted by scientists from the University of Missouri may be an important step in the development of an artificial heart which can be implanted in the chests of human heart-disease patients.

Fifty watts of electrical energy, believed to be enough to power a small mechanical heart, have been transmitted through the chest walls of dogs, with no resultant rise in temperature of the chest tissues and no apparent discomfort to the animal. The electrical energy can be transferred across the chest from a coil outside to a receiving coil buried under the skin or ribs of the patients.

What the Missouri scientists envision is a small pump that can be connected to the arteries and veins and sewn into the chest. The artificial heart would pump the blood and the patient's own lungs would be used to oxygenate it.—*New York Times, March 22, 1961.*

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dosage is convenient:

Simply dissolve 8 ounces in one gallon of water.

First Day: Administer one pint of solution to every 10 gallons of drinking water.

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Follow with one pint of solution to every 30-40 gallons of water for prevention of dysentery and for growth stimulant.

OR—add one ounce of VIT-A-SUL to one pint of water, and add two tablespoons of this solution to each gallon of drinking water.

NOTE: Dissolve Immediately Prior to Dispensing.

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A simple effective treatment for:

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Coming Meetings

Notices of coming meetings must be received 30 days before date of publication.

May, 1961

Third Symposium of the International Association of Veterinary Food Hygienist. Nice, France, May 27 to June 2, 1962. The Secretariate, International Association of Veterinary Food Hygienists, Sterrenbos 1, Utrecht, The Netherlands.

June, 1961

Texas, Agricultural and Mechanical College of. Fourteenth annual conference for veterinarians. School of Veterinary Medicine, Agricultural and Mechanical College of Texas, College Station, Texas, June 1-2, 1961. Dr. R. D. Turk, Texas Conference for Veterians, School of Veterinary Medicine, College Station, Texas, conference chairman.

Kansas State University. Twenty-third annual conference for veterinarians. Little Theatre, Student Union Building, Kansas State University, Manhattan, Kan., June 11-13, 1961. Dr. John Noordsy, Dykstra Veterinary Hospital, Kansas State University, Manhattan, Kan., chairman.

Kansas Veterinary Medical Association. Semiannual business meeting. Student Union Building, Kansas State University, June 11-13, 1961. Dr. M. W. Osburn, 1525 Humboldt St., Manhattan, Kan., secretary-treasurer.

Virginia Veterinary Medical Association. 2nd annual short course. Virginia Polytechnic Institute, Veterinary Science Department, Blacksburg, June 12-14, 1961. Dr. S. L. Kalison, Agricultural Extension Service, Virginia Polytechnic Institute, Blacksburg, Va., chairman.

Pennsylvania Veterinary Medical Association. Annual meeting. Pennsylvania State University, University Park, Pa., June 13-15, 1961. Dr. Raymond C. Snyder, Walnut Street and Copley Road, Upper Darby, Pa., secretary.

South Carolina Veterinary Medical Association. Summer program. Columbia Hotel, Columbia, S.C., June 15-17, 1961. Dr. L. D. Rodgers, Greenwood Veterinary Hospital, Box 348, Greenwood, S.C., program chairman.

Montana Veterinary Medical Association. Annual meeting. The Meadow Lark Country Club, Great Falls, Mont., June 16-18, 1961. Dr. G. A. Morrison, 316 Central Ave., W., Great Falls, Mont., secretary.

Wyoming Veterinary Medical Association. Annual meeting. Powell, Wyo., June 18-20, 1961. Dr. J. F. Ryff, P.O. Box 960, Laramie, Wyo., secretary.

Georgia Veterinary Medical Association. Fifty-fifth annual convention. Jekyll Island, Ga., June 18-20, 1961. Dr. A. M. Mills, 325 Pinecrest Dr., Athens, Ga., secretary.

North Dakota State Veterinary Medical Association. Fifty-sixth annual meeting. Ray Hotel, Dickinson, N.D., June 18-20, 1961. Dr. C. B. Bjornson, North Dakota State University, Fargo, N.D., secretary-treasurer.

North Carolina Veterinary Medical Association. Sixtieth annual meeting. Morehead-Biltmore Hotel, Morehead City, N.C., June 19-21, 1961. Dr. J. T. Dixon, 3026 S. Main St., Winston-Salem, N.C., secretary.

Iowa State University. Annual conference for veterinarians. Memorial Union, Ames, Iowa, June 20-21, 1961. C. D. Lee, Iowa State University, School of Veterinary Medicine, Ames, Iowa, committee member.

Massachusetts Veterinary Association. Summer meeting. University of Massachusetts, Amherst, June 21, 1961. Mr. L. T. Maloney, 6 Beacon St., Boston 8, Mass. consultant.

Minnesota Veterinary Medical Association and South Central Minnesota Veterinary Medical Association. Summer clinic. Owatonna, Minn., June 21, 1961. Dr. Paul Cox, 1005 Mineral Springs Rd., Owatonna, Minn., general chairman.

Idaho Veterinary Medical Association. Annual meeting. Flamingo Motel, Idaho Falls, June 22-24, 1961. Dr. A. P. Schneider, Room 206, Statehouse, Boise, Idaho, secretary.

Saskatchewan Veterinary Medical Association. Annual meeting. Saskatchewan Hotel, Regina, June 23-24, 1961. Dr. W. Turnbull, Department of Health, Saskatoon, Sask., secretary-treasurer.

Utah Veterinary Medical Association. Annual meeting. Utah State University, Logan, Utah, June 26-27, 1961. Dr. J. A. Thomas, Box 592, Provo, Utah, secretary.

Maritime Veterinary Associations. Twelfth annual joint conference. Mount Allison University, Sackville, N.B., June 27-29, 1961. Dr. R. McG. Archibald, P. O. Box 310, Sackville, N.B., Can.

Nebraska, University of. Swine Repopulation Conference. Veterinary Science Department, University of Nebraska, Lincoln, Neb., June 28-29, 1961. Dr. Crosby Howe, Department of Veterinary Science, University of Nebraska, Agricultural Experiment Station, Lincoln 3, Neb., chairman.

July, 1961

Mississippi-Louisiana Veterinary Medical Associations. Bi-state annual meeting. Buena Vista Hotel, Biloxi, Miss., July 2-4, 1961. Dr. J. W. Branson, Box 4223, Fondren Station, Jackson, Miss., secretary; or Dr. R. B. Lank, 246 Guava Dr., Baton Rouge, La., executive secretary.

Nebraska Veterinary Medical Association. Annual summer and clinical demonstration meeting. Town House, Omaha, Neb., July 10-12, 1961. Mr. Bob Garey, Hotel Clarke, Rooms 18-419, Hastings, Neb., executive secretary.

Kentucky Veterinary Medical Association. Fiftieth annual meeting. Sheraton Hotel, Louisville, Ky., July 17-18, 1961. Dr. L. S. Shirrell, 545 E. Main St., Frankfort, Ky., secretary.

Auburn University. Fifty-fourth annual conference for veterinarians. Auburn University, School of Veterinary Medicine, Auburn, Ala., July 23-26, 1961. Dr. J. E. Greene, dean.

August, 1961

International Association of Milk and Food Sanitarians. Golden anniversary meeting. Wanderer Resort Motel, Jekyll Island, Ga., Aug. 14-17, 1961. T. L. Jones, Room 512, 1145 Nineteenth St., N.W., Washington 6, D.C.

American Association of Veterinary Bacteriologists. Annual meeting. Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, Mich., Aug. 18-19, 1961. C. H. Cunningham, Department of Microbiology and Public Health, College of Veterinary Medicine, Michigan State University, East Lansing, secretary.

American Veterinary Medical Association. Ninety-eighth annual meeting. Sheraton-Cadillac Hotel, Detroit, Mich., Aug. 20-24, 1961. Dr. H. E. Kingman, Jr., 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

International Association of Microbiological Societies. Seventh International Congress of the Permanent Section on Biological Standardization. London, England, Aug. 28 to Sept. 1, 1961. E. C. Hulse, Ministry of Agriculture, Central Veterinary Laboratory, Weybridge, Surrey, secretary of organizing committee.

Electron Microscope Society of America. 19th annual meeting. Pittsburgh Hilton Hotel, Pittsburgh, Pa., Aug. 23-26, 1961. Dr. A. R. Taylor, Research Division, Parke, Davis and Co., Detroit 32, Mich., program chairman.

Foreign Meetings

Fourth International Congress on Animal Reproduction. The Hague, Netherlands, June 5-9, 1961. For additional information contact: the Secretariat of the Fourth International Congress on Animal Reproduction, 14, Burgemeester de Monchyplein, The Hague, Netherlands, Dr. L. Hoedemaker, secretary to the organizing committee.

Eighth International Congress of Animal Husbandry. Hamburg, Germany, June 13, 1961.

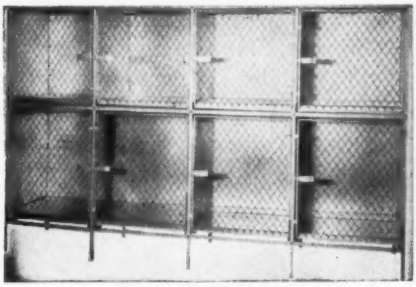
Twelfth World's Poultry Congress. Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia, Aug. 13-18, 1962. Dr. Cliff D. Carpenter, chairman, U.S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Calif.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

Kennel Cage Units

of Wire Mesh and Metal

IN TWO TIERS: 4, 6, and 8 cage units
IN THREE TIERS: 6, 9, and 12 cage units

Sanitary, durable, easily maintained; galvanized materials; removable pans; hand woven wire mesh doors, maximum light and ventilation; sized for dogs and cats; removable partitions; shipped crated; easily assembled.



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Shipped unassembled, saves freight charges
Terms may be arranged

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39-40 Twenty-First St., Long Is. City 1, N.Y.

Provide Healthful Chewing Outlet for Pups

While chewing is a source of pleasure for pups, it is often a source of grief for their owners. The best way to preserve furniture, shoes, etc., and help a pup develop strong teeth and jaws is to provide a suitable chewing outlet.

Strong, natural bones may serve the dogs' teething needs, but beware of bones with sharp pieces or splinters. Contrary to popular belief, knuckle bones which dogs can chew up and swallow provide little, if any, usable calcium or other nutrients.

An old leather shoe with the rubber heel and all metal parts removed is a good teething outlet. Also, dried rawhide products which are now on the market are good. Nylon bones are effective and economical. They last a long time, can be washed in soap and water, and help to clean teeth and stimulate gums. Thin shavings raked off in hard chewing are swallowed and break down in the dog's gastric fluids.—*Dog World, April 1961.*

Weimaraner Wins Bravery Award

The American Humane Association Stillman Certificate for "alertness and bravery" was presented to "Vicky," a 3-year-old Weimaraner owned by Mr. and Mrs. Gene Maeckel. Vicky was struck in the face when she attacked a 3½-ft. copperhead snake, coiled and ready to strike Mrs. Maeckel's father. The dog was rushed to a veterinarian for treatment and has fully recovered.—*A.H.A. Newsletter, Jan., 1961.*

Transmitters "Bleep" Sheep Bleat

Little Bo Peep may have lost her sheep, but the farmers in Australia are taking no chances. The sheep farmers are rigging the leader of each flock with a tiny radio transmitting set which sends out an occasional "bleep." This signal is picked up by the farmer's receiving set, thus permitting him to keep track of the flocks scattered over the vast Australian sheep stations.—*Science News Letter, Nov. 19, 1960.*

Proposed Amendments to AVMA Bylaws

The following amendments are published in accordance with Article XI of the Bylaws and will, therefore, be in order for final action at the 1961 session of the House of Delegates.

A) ESTABLISHING A SECTION ON REGULATORY VETERINARY MEDICINE

Amend the Bylaws—Article VIII, Section 6, *Scientific Programs* (a), to read:

Division into Sections. For the purposes of the scientific program conducted as a part of the annual session, the Association shall be divided into the following sections:

Large Animals
Poultry
Public Health
Research
Regulatory Veterinary Medicine
Small Animals

Each section shall have a chairman and secretary chosen by the president from a list of nominations submitted by the members attending the initial section meeting or, in lieu of such nominations, by direct appointment.

B) VOTING POWER OF DELEGATES

Amend Bylaws, Article VI—House of Delegates, Section 4, *Voting Power*, to read:

Section 4.—Voting Power. Each delegate representing a constituent association (other than the National Association of Federal Veterinarians) shall have the vote determined as follows:

50 active Association members, or less	1 vote
51-150 active Association members	2 votes
151-300 active Association members	3 votes
301-450 active Association members	4 votes
451-600 active Association members	5 votes
601-750 active Association members	6 votes
751-900 active Association members	7 votes
901-1050 active Association members	8 votes
1051-1200 active Association members	9 votes
1201-1350 active Association members	10 votes
1351-1500 active Association members	11 votes

Should the active members residing in the area of a constituent association exceed 1,500, the vote shall be increased by one vote for each additional 150 members. The number of active members shall be determined on a current basis from the records of the Association and shall be certified by the executive secretary 30 days before the annual meeting of the House of Delegates. Delegates representing other groups of veterinarians granted representation and the National Association of Federal Veterinarians shall have two votes. An alternate delegate shall vote only in the absence of the delegate for whom he is the alternate.

C) AFFILIATE MEMBERS

Amend Bylaws, Article 1, Members, Section 2, Affiliate Members, to read:

Section 2. Affiliate Members. Teachers of veterinary medicine or of the sciences allied to veterinary medicine, *and persons engaged in veterinary research,* who do not qualify for admission as active members and who are citizens of the United States or Canada, may become affiliate members of the Association on nomination by the House of Delegates. Affiliate members shall have the same rights as active members except that no affiliate member may hold office or vote on any matter.

D) DUES EXEMPTIONS

Amend Bylaws, Article 1, Members, Section 5, Dues, paragraph (c) (ii), to read:

ii) A member who has completed 35 continuous years as an active member of the Association, has retired from veterinary activity, and who requests that he be exempt from the payment of dues.

E) DEFINING DELEGATES REPRESENTING ARMED SERVICES

Amend Bylaws, Article VI — House of Delegates, Section 2, Selection and Tenure, paragraph (ii), to read:

ii) Delegates and alternate dele-

gates representing the veterinarians in the Army and Air Force of the United States shall be selected by the *assistant for veterinary service for the surgeons general of the Army and Air Force, respectively, for terms of one year.*

F) WITHDRAWING OF APPROVAL FROM CUBA WITH RESPECT TO REPRESENTATION IN HOUSE OF DELEGATES

Amend Bylaws, Article VI — House of Delegates, Section 2, Selection and Tenure, paragraph (iii), to read:

iii) Delegates and alternate delegates representing other groups of veterinarians granted representation shall be selected for terms of one year.

G) CLARIFIES THE MEANING OF "EXECUTIVE MEETING" AS APPLIED TO HOUSE OF DELEGATES

Amend Bylaws, Article VI, House of Delegates, Section 6, Meetings, paragraph (e), to read:

e) Executive meetings are those meetings which may be attended only by the *delegates and ex officio members of the House of Delegates as defined in Article VI, Section 2 of the Constitution,* and such administrative employees of the Association and of the House of Delegates who, in the opinion of the Presiding Officer, are necessary for the functioning of the House.

H) ELECTION OF OFFICERS

Amend Article II — Officers, Section 2, Election (a), to read:

a) The president-elect, the vice-president and, when necessary, the president shall be elected by the House of Delegates at each annual meeting of the House beginning with the annual meeting in 1961. All elections shall be by ballot under the supervision of a board of tellers appointed by the president-elect from the delegates and ex officio members of the House of Delegates. A majority of the votes cast shall be necessary to elect. In case no nominee receives a majority of the votes cast, the nominee receiving the lowest number of votes shall be eliminated and a new ballot taken.

I) INTEGRATION OF MEMBERSHIP

Amend Bylaws, Article I, Members Section 1 — Active members, paragraph (a), to read:

a) A member in good standing of a constituent association, having been so certified, shall become an active member of the Association if he meets the requirements set forth in Article III of the Constitution and is approved for membership by the Judicial Council. An active member must continue to retain membership in a constituent association in order to remain an active member of this Association, if so directed by the proper governing body of the constituent association and notification to this effect on the certificate of constituent association membership.

J) ORDER OF BUSINESS AT THE HOUSE OF DELEGATES

Amend Article VI, Section 7, to read:

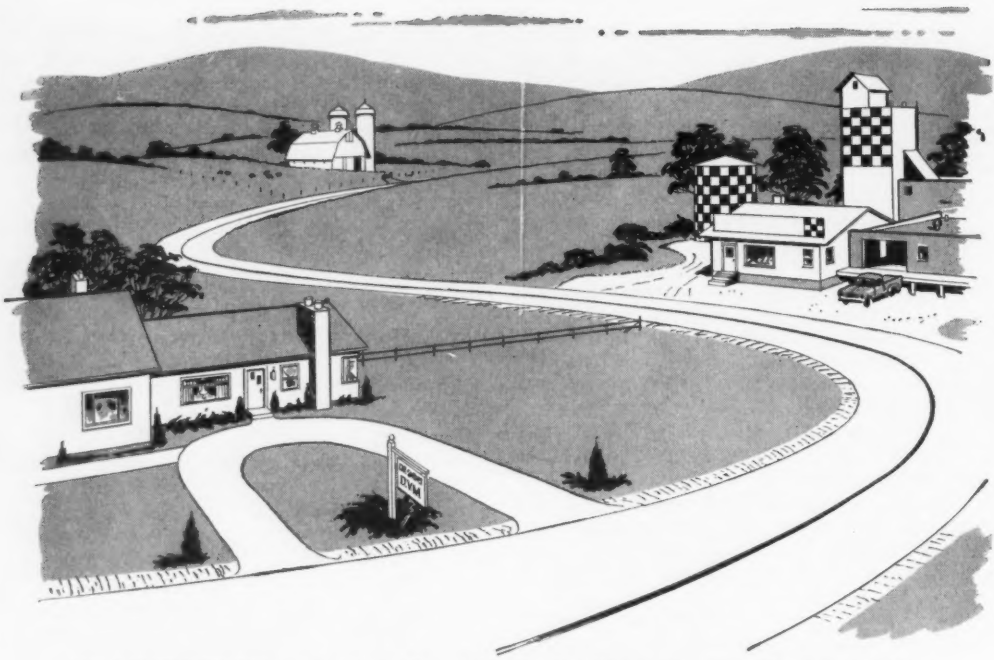
Section 7—Procedure.—The following shall be the general order of business at all annual meetings of the House of Delegates:

a) Call to order.
b) Roll call.
c) Presentation of minutes.
d) Presidential message.
e) Proposals for honorary membership.
f) Reports of officers and the Executive Board.
g) Reports of councils, special committees, and committees of the House of Delegates.
h) Nomination of officers.
i) Election of council and House committee members.
j) Action on proposals for affiliate and honorary members.
k) Unfinished business.
l) New business.
m) Election of officers.

At any meeting, the House, by a majority vote, may change the order of business.

New Feature to Give Drug Data

Because most physicians have been obtaining their new drug information from sources supplied by those who have an interest in selling the drugs, the American Medical Association has begun publication of a new feature in their journal entitled "New Drugs and Developments in Therapeutics." This feature is intended as a first step in a reorganization of the activity of the council on drugs and is designed to provide unbiased, accurate, and factual material. The first column in the series spotlights new drugs for glaucoma, including an evaluation of action, side effects, and systemic toxicity.—*Drug Trade News (Dec. 26, 1961): 1.*



"PARTNERS" on the Road to Better Farm Prosperity

The Veterinarian and the Purina Salesman share in a common objective, namely that of helping the American farmer attain a greater margin of profit from the animal phase of his operation. Both have a vital interest in this objective and both can render a greater service through cooperative efforts.

The Veterinarian serves animal agriculture by diagnosis, by preventive medicine programs and treatment of disease.

Through the trained service of his Purina Dealers, the Salesman can deliver Chows that are balanced in a variety of formulations to meet practically any nutritional need. He can also supply Purina Chows that contain medicament additives within approved levels and thus have the precision required for efficiency and safety where mass medication may be required.

The Veterinarian and the Purina Salesman can make greater contributions to the prosperity of animal agriculture by traveling as "partners."

PURINA . . . YOUR "PARTNER" IN SERVING ANIMAL AGRICULTURE

Healthy litters and sows come from a planned, complete-cyclic feeding program.

Too few hog breeders realize that anemia, scours, rickets, parasites, TGE, erysipelas and other pig-killers are directly or indirectly caused by poor nutrition before the pig is farrowed. Weak baby pigs are easy targets for disease—and are also the most frequently lost by the sow laying on them.

Clearly, the easiest and cheapest method of keeping pig losses low is by proper sow nutrition, even before breeding. RIBAD II and CON-O-Mineral fortify pre-breeding rations by furnishing ample Vitamin A plus a balance of other essential nutrients. Then, during the gestation and lactation periods, when Vitamin A requirements go up five-and-ten-fold, CON-O-Mineral and RIBAD II help keep sows in the best condition to develop strong, disease-resistant pigs. This means more pigs weaned . . . and at better weights.

Get the full story of better profits through better nutrition in the all-new VpC LIVESTOCK FEED BOOK—facts and formulas for all feeding situations. Write now!

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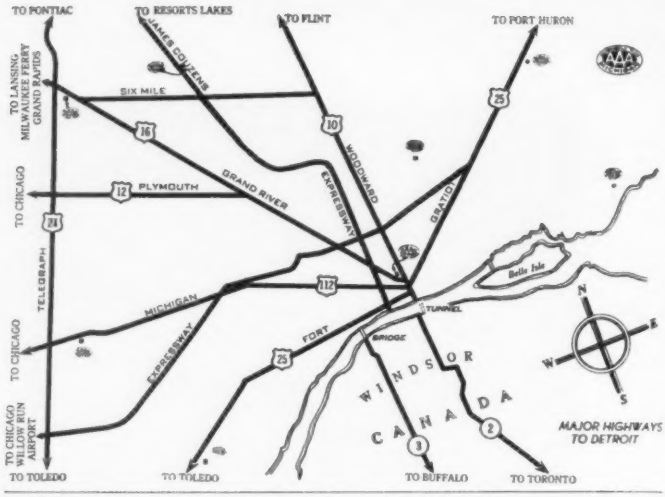
At the right are some of the major highways into Detroit which will bring you to the . . .

98th

Annual AVMA

Meeting

August 20-24, 1961



All Roads Lead to Detroit

Whether you travel by plane, train, bus, or automobile, the 1961 AVMA convention city is one of the easiest places in the world to reach. Strategically located in the heart of the Great Lakes region, Detroit is only a few hours from the most populous areas. Day in and day out, literally thousands arrive and leave the city over a vast transportation complex that includes high-speed expressways, modern air terminals, rail stations, and ship piers.

Automobiles

A network of fast, all-weather United States and Canadian highways lead to Detroit. A new expressway connects the city with the trans-continental turnpike system (see map). Within the city, depressed expressways whirl motorists along at open highway speeds, intersecting near the heart of the city in a 5-level tapestry of bridges. The expressway network, when completed, will total 120 miles.

A scenic trip is through the upper peninsula of Michigan and crossing the Straits of Mackinac via the new Mackinac Bridge. Auto traffic from the west can also cross Lake Michigan at Milwaukee by ferry.

Busses

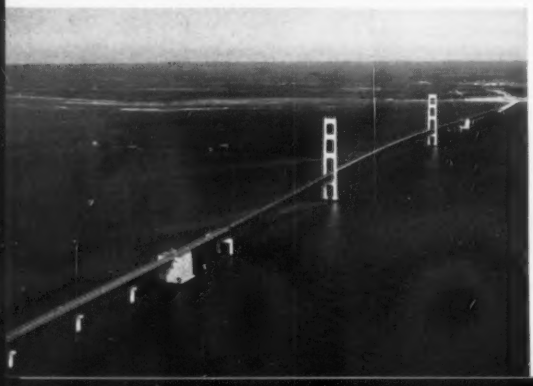
Two coast-to-coast bus systems serve Detroit and maintain large depots at the Civic Center Terminal, conveniently located to the heart of the city. Both Greyhound and Trailways offer sightseeing tours.

Air Travel

Fifteen air lines — Allegheny, American, BOAC, Capital, Delta, Eastern, Lake Central, Mohawk, North Central, Northwest, Pan American, Tag, Trans Canada, Trans World, and United — have more than 240 daily flights into and out of Willow Run and Detroit Metropolitan airports. TWA provides jet service to Detroit from St. Louis; American from New York, Chicago, Los Angeles, and San Francisco; and Delta Air Lines from Miami.

Trains

Each day, 30 passenger trains arrive at, or leave, 3 major Detroit railroad stations. The New York Central, Chesapeake & Ohio, Baltimore and Ohio, Grand Trunk (Canadian National), Wabash, and Canadian Pacific systems make the 1961 convention city easily accessible from all parts of the country.



An engineering feat which experts said could never be accomplished, Mackinac Bridge, the world's longest suspension bridge, connects Michigan's Lower and Upper Peninsulas. Designed to withstand stresses of ice pressure and wind velocity, the 5-mile bridge cost $100,000,000 and required 4 years to build.

AVOID THE CROWDS!

REGISTER IN ADVANCE!

You can avoid long waits and frustrating delays by registering in advance for attendance at

THE 98th ANNUAL MEETING OF THE AVMA
AUGUST 20-24, 1961
DETROIT, MICHIGAN

Simply fill in the form on this page and RETURN IT TO US along with your check for the correct amount. We will mail you a receipt. You need only present your receipt in Detroit and pick up your convention tickets and material. Mail your advance registration today!

REGISTRATION FEES
(Fees must be submitted with registration form)

AVMA members and their guests	**$ 8.00 each**
Wives of AVMA members	**$ 5.00 each**
Children	**$ 3.00 each**
Nonmembers and guests	**$15.00 each**
Alumni Dinner Tickets	**$ 5.00 each**

(Alumni Dinners will be held on Tuesday, August 22)

NOTE: Wives and children must be registered only if they will participate in women's, teens, or subteens' programs. Advance registration closes August 1, 1961. Refunds will be made only if request is received prior to August 7, 1961. Hotel reservations must be made by individual.

Cut on Dotted Line and Return to AVMA, 600 S. Michigan Ave., Chicago 5, Illinois

For ADVANCE REGISTRATION: 98th ANNUAL MEETING OF THE AVMA
August 20-24, Detroit, Michigan

Please register me and others named below in advance and furnish receipt. My check for $_____ is enclosed.

Name (please print) _____

Complete Address _____

_____

Wife's Name _____

Guest's Name (s) _____ Children's names and ages

_____ _____

_____ _____

Number of Alumni Dinner Tickets _____ School _____

RETURN TO: AVMA, 600 S. Michigan Ave., Chicago 5, Ill.

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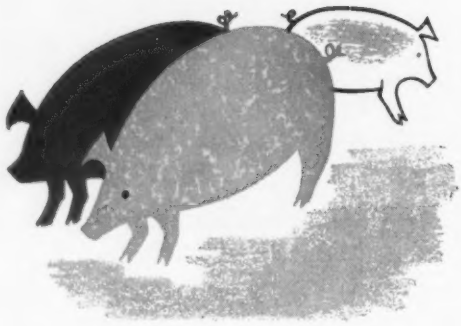
for the prevention of swine erysipelas . . .



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in a new 2-cc. dose easy to administer . . . with less inoculation reaction

better products through Rx research

Ery-Jex is the same fine erysipelas preventive as before . . . but now concentrated for ease of administration and reduced reaction from inoculation. New methods of concentration enable one 2-cc. dose of Ery-Jex to provide a high degree of immunity within 14 to 21 days; protects pigs all the way to market. Inject Ery-Jex subcutaneously; duration of immunity is approximately one year. Available in 20 and 100-cc. vials . . .
with sales to graduate veterinarians only.

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DOCTOR...
DO YOU VACCINATE OR IMMUNIZE?
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you get ASSURED MAXIMUM IMMUNITY!

HERE'S WHY: TITRATIONS

• Product titrations (dilutions) of each serial of vaccine are made to determine and insure the concentration of modified live virus contained in each dose.

This concentration of virus must meet exacting standards as determined by two years evaluation studies at Baldwin Laboratories, of the modified live virus requirements for **assured maximum immunity in swine.**

HERE'S WHY: S.P.F. PIGS

• Further safety in immunization with Baldwin vaccine is assured by the injection of each serial of vaccine into ideal biological filters . . . **S.P.F. pigs.**

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BON-EVAC **(Porcine Origin)**
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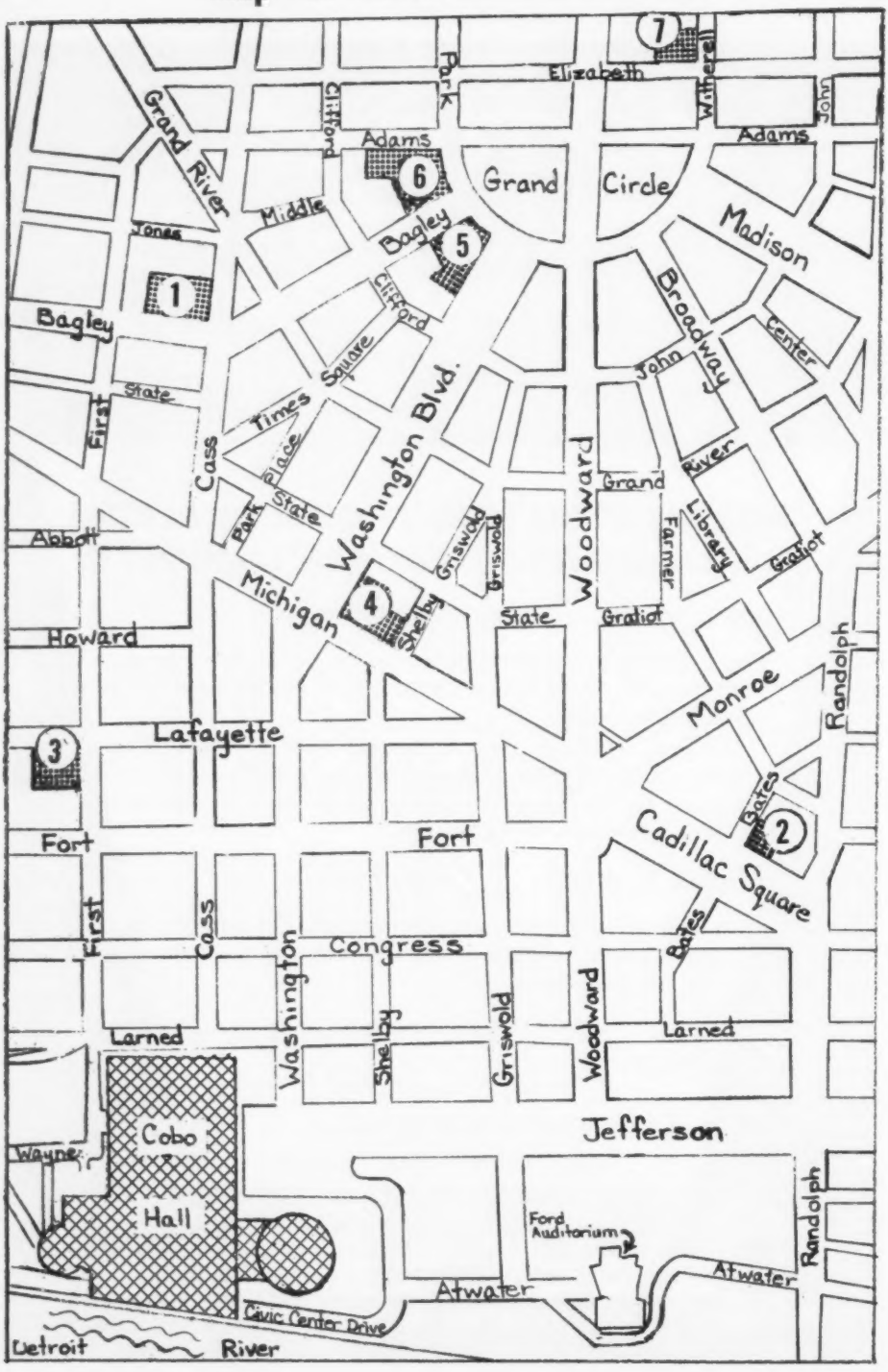
"SERVICE ON A PROFESSIONAL LEVEL"

Map of Downtown Detroit



ANNUAL MEETING HOTEL RESERVATION REQUEST

American Veterinary Medical Association

Detroit, Michigan - August 20-24, 1961

INSTRUCTIONS AND INFORMATION

Please give ALL of the information requested below and mail this form to the Detroit Convention and Tourist Bureau. All reservations must be cleared through the Housing Bureau.

Blocs of rooms have been allocated for our use in the hotels which are listed. The Housing Bureau must have the names of all the persons who will occupy each room. No bloc reservations will be made.

Placement will be made in the order received. Your choice of hotels will be followed if rooms are available. Otherwise, assignment will be made to best possible advantage elsewhere. You will receive a confirmation directly from the hotel. (NOTE: All rates are subject to change.) If you desire accommodations in a Detroit hotel not listed or a motel, please so indicate. The Housing Bureau will try to place you there.

FAMILY PLAN — The hotels listed offer a "family plan" whereby children under 14 years of age will be accommodated in the same room with their parents at no extra charge. If more than one room is required to accommodate children, the hotel will charge only the single rate for each additional room.

ANNUAL MEETING HOTELS

Hotel	Singles	For Two Persons		Suites	
		Doubles	Twins	1 Bedroom	2 Bedrooms
1 Detroit-Leland	$7.50-13.50	$10.50-16.00	$12.00-19.00	$25.00-35.00	$38.50-50.50
2 Henrose	6.50-10.50	9.00-13.50	12.50-16.00	25.00	45.00
3 Pick-Fort Shelby	6.00-12.75	9.00-15.50	10.50-16.25	23.00-43.50	39.75-58.75
4 Sheraton-Cadillac (Headquarters Hotel)	8.50-18.00	14.35-20.50	14.85-23.00	29.00-37.50	46.00-56.00
5 Statler Hilton	7.00-13.50	12.50-17.00	14.00-24.50	38.00-44.00	59.50-97.00
6 Tuller	5.00- 9.00	9.00-12.00	10.50-15.00		
7 Wolverine	6.00- 9.00	8.50-10.00	11.00-18.50	25.00	35.00-45.00

APPLICATION FOR HOTEL ACCOMMODATIONS

MAIL TO: Housing Bureau, AVMA
Detroit Convention and Tourist Bureau
626 Book Building
Detroit 26, Michigan

CHOICES OF HOTELS: 1st CHOICE: HOTEL _____ 2nd CHOICE: HOTEL _____

3rd CHOICE: HOTEL _____ 4th CHOICE: HOTEL _____

ACCOMMODATIONS DESIRED: RATE DESIRED:

_____ Room(s) with one bed for one person (Single) $ _____ to $ _____

_____ Room(s) with twin beds for two persons (Twin) $ _____ to $ _____

_____ Room(s) with one bed for two persons (Double) $ _____ to $ _____

_____ Suite(s) parlor and one bedroom $ _____ to $ _____

_____ Suite(s) parlor and two bedrooms $ _____ to $ _____

ARRIVAL TIME: Date _____ Hour _____ DEPARTURE TIME: Date _____ Hour _____

LIST NAMES OF ALL PERSONS WHO WILL OCCUPY EACH ROOM:

Name Street Address City and State

_____

_____

_____

_____

_____

_____

CONFIRM RESERVATION TO: NAME _____

NAME OF COMPANY _____

STREET ADDRESS _____

CITY _____ ZONE _____ STATE _____

New Antibiotic-Vitamin combination in a premeasured dispensing pack

Each packet medicates up to
100 gallons of drinking water

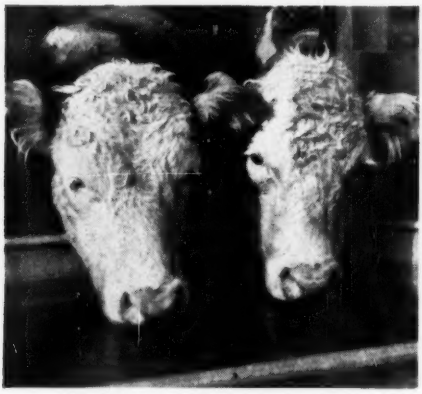
Supplies time-proven oxytetracycline
fortified with 8 important vitamins

Available with tear-off dispensing label

Sold only to veterinarians

When oral therapy is desired, you can choose Cosa-Terramycin Fortified Soluble Powder for its broad-spectrum activity against many primary diseases of cattle, sheep, swine and other species.

And because of Cosa-Terramycin Fortified Soluble Powder's effectiveness against an unusually-wide range of organisms it is recommended as the treatment of many infections which narrow-spectrum antibiotics or sulfas—alone or in combination—may often miss.



Vitamin support

In addition to the oxytetracycline HCl, Cosa-Terramycin contains high levels of eight vitamins to help meet increased nutrient needs of sick or stressed animals. This vitamin intake is especially important with animals which are too sick to eat, but—as frequently happens—still continue to drink.

New convenience of dispensing

The 62 premeasured packets in Cosa-Terramycin's 24.8-lb. dispensing drum makes water treatment simple.

Each packet contains enough Cosa-Terramycin for 50-100 gallons of water, depending on the treatment level desired.

And the packets contain convenient tear-off labels for dispensing purposes.

Each lb. contains 25 gms. oxytetracycline HCl, 500,000 I. U. vitamin A, 100,000 I. U. vitamin D_3, 200 mg. vitamin K, 150 I. U. vitamin E, 2,000 mcg. vitamin B_{12}, 800 mg. riboflavin, 4,000 mg. niacinamide and 1,500 mg. pantothenic acid.

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Department of Veterinary Medicine
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TOTAL WORD COUNT must include complete box number address (7 words) or personal address line.

COMMERCIAL WANT ADS—$5.00 for the first 25 words, 25 cents for each additional word; $1.00 for use of box number. (See paragraph above for total word count.)

Remittance must accompany ad.

DEADLINES

1st of month issue — 8th of month preceding date of issue.

15th of month issue — 22nd of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the box number, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be sent to the advertiser.

Wanted—Veterinarians

Wanted—veterinarian with Maryland license. $6,000 beginning. Mostly small animals. Partnership possibilities. Opening now or in June. Address Box E 54, JOURNAL of the AVMA.

Wanted—associate veterinarian for modern, lucrative small animal clinic in southern California. Possible lease or sale in future. Excellent working and living conditions—coastal area, ideal climate, water sports, boating, no smog. Address Box E 56, JOURNAL of the AVMA.

Exceptional opportunity in Ohio for ambitious young veterinarian with small animal experience. Modern hospital, excellent clientele. Located in suburban community. Lease possibilities if individual qualifies. Address Box E 60, JOURNAL of the AVMA.

Wanted—veterinarian experienced in diseases of large animals to conduct a diagnostic laboratory for an ethical biologic producer. Experience in microbiology desirable but not imperative. Some development and field evaluation work required. Salary commensurate with qualifications. All inquiries treated confidential. State personal history, experience, availability and salary in application. Address Box E 61, JOURNAL of the AVMA.

Veterinarian wanted for staff of large, modern institutional hospital for small animals in New York City. Excellent experience and research potential for enthusiastic person. License required. Address Box E 62, JOURNAL of the AVMA.

Wanted—conscientious veterinarian as associate in progressive AAHA 2-man practice in eastern New York. Air conditioned apartment. License required. Give references. Address Box E 64, JOURNAL of the AVMA.

Wanted—capable veterinarian of accredited school to assist in well-established AAHA hospital in eastern United States. Excellent opportunity for right person. 5-room furnished apartment available separate from hospital. State age, qualifications and references. Address Box E 72, JOURNAL of the AVMA.

Wanted—assistant for modern small animal hospital on Long Island. Opportunity for advancement. June graduate considered. Address Box E 73, JOURNAL of the AVMA.

Wanted—veterinarian with Connecticut license to take over small animal practice 20 miles north of Hartford for the summer. Address Dr. L. Fournier, 143 Elm St., Thompsonville, Conn.

Wanted—licensed veterinarian for staff of completely-equipped, modern, AAHA small animal hospital in New York City suburb. Complete details in first letter. Address Box D 56, JOURNAL of the AVMA.

Wanted—assistant for mixed practice in Middle Atlantic state. Convenient living facilities. Excellent opportunity for right person to buy into practice. Good salary and commission. Please state age, experience, availability and other qualifications. Married man preferred. Address Box E 24, JOURNAL of the AVMA.

Wanted—veterinarian to assist in small animal practice. AAHA hospital in Michigan. Definite days off. Salary depending on experience. Percentage of net could be offered in the future. State age and qualifications. Address Box E 11, JOURNAL of the AVMA.

Wanted—Positions

Experienced graduate, married, family, age 27, desires position in a California or Kansas small animal practice that could lead to partnership, lease or purchase. Address Box E 51, JOURNAL of the AVMA.

Veterinarian, 1945 graduate with 15 years' experience in own practice, desires change. Prefer biological or pharmaceutical manufacturer or would consider group practice. Address Box E 52, JOURNAL of the AVMA.

London, England, graduate, 2 years' mixed practice, seeking position in modern practice. Horse and/or small animal work preferred. Address Box E 58, JOURNAL of the AVMA.

1958 graduate, now in predominately large animal practice in Kansas, desires position in progressive mixed practice in western United States. Licensed in Arizona, Utah, and Kansas. Will take necessary state boards. Address Box E 63, JOURNAL of the AVMA.

Veterinarian desires employment opportunity in southwestern states preferably in small animal practice. Experienced in mixed practice. Have capital. Address Box E 66, JOURNAL of the AVMA.

Graduate (KSU '58) desires position leading to partnership in small animal practice in Midwest. Age 28, married, will complete military obligation in August. Address Box E 67, JOURNAL of the AVMA.

Veterinarian (TEX '59), married, age 25, completing military service in July, 1961, desires position in small or mixed animal practice in Southwest leading to permanent association. Address Box E 68, JOURNAL of the AVMA.

Position with future in small animal or mixed practice, or purchase same, desired by young married veterinarian. Licensed in Colorado, Wyoming, California and Kansas. Address Box E 69, JOURNAL of the AVMA.

Clipper, 6 years' experience, desires position with small animal hospital in Massachusetts. State salary. Address Box E 75, JOURNAL of the AVMA.

Relief veterinarian with general practice experience available for short or long periods. Licensed in California and Colorado. Address Dr. Kline, 2675 Youngfield, Golden, Colo. Phone BElmont 7-7026.

Veterinarian, experienced in small animal practice, licensed in New York and New Jersey, is available for relief work in New Jersey and New York metropolitan area. Address Box C 9, JOURNAL of the AVMA.

Experienced graduate (MO '60) desires position as relief veterinarian in small animal practice during August, September and October in St. Louis or Kansas City areas. Address Dr. Charles Leezy, University of Pennsylvania School of Veterinary Medicine, 39th and Woodland Ave., Philadelphia, Pa.

For Sale or Lease—Practices

For sale—modern established small animal hospital in suburban Baltimore, Md. Moderate down payment, will finance balance. Address Box E 53, JOURNAL of the AVMA.

For sale or lease—veterinary clinic facilities in excellent location in Houston, Texas. Air conditioned building, plastic cages, runs, some furnishings. Lease 1 to 3 years at $150 per month. Portable x-ray available to rent or buy on time. Address Box E 55, JOURNAL of the AVMA.

Large, modern small animal hospital in New York City for sale or long term lease. $25,000 down required. Address Box E 57, JOURNAL of the AVMA.

For sale—established cattle practice in southern New York. Large house includes income apartment; large office building including garages. Two-way radio, drugs and equipment. Price—1 year's gross; $21,000. $6,000 needed to handle. Address Box E 65, JOURNAL of the AVMA.

For sale—long-established large animal practice in a prosperous Minnesota community. Residence, office and equipment—$25,000. Must have capital. Address Box E 59, JOURNAL of the AVMA.

For sale—thriving, fully-equipped small animal hospital in Kansas City area. Address Box E 70, JOURNAL of the AVMA.

For sale—large animal practice in eastern Iowa county seat town with pavement 4 ways. Priced at real estate value. Address Box E 74, JOURNAL of the AVMA.

For sale—solidly established (9 years) general practice in central Oregon. House, clinic, covered runs. Price complete; considerably under 1 year's gross. Available now. Address Dr. James W. Lewis, Mandras, Ore. Tel.—475-2283.

For sale—mixed practice in prosperous rural area of eastern New York State. Gross—$23,000. Hospital and real estate. Substantial capital required. Address Box D 19, JOURNAL of the AVMA.

For sale—veterinary clinic, house, and resort with 5 units on 4,000 acre lake in Michigan Upper Peninsula. General practice, mostly small animal. Good retirement investment. Address Dr. Paul Boyer, Curtis, Mich.

Need good practices to sell in the Southwest. Professional service for the professions. Licensed and bonded, Charles E. Doyle, D.V.M., Practice Broker, 4813 N. McArthur, Oklahoma City, Okla.

For sale—Indiana established, fully-equipped general practice in Michiana area. Clinic includes apartment, drugs, 2-way radio and chute. Credit and personal references in first letter. Address Box D 70, JOURNAL of the AVMA.

For sale—completely equipped small animal practice in exclusive Denver suburb, located in foothills a short distance from mountain recreation. House, hospital, kennel combination. Price—$48,500 with $15,000 down. Address Box E 17, JOURNAL of the AVMA.

For sale—Indiana mixed practice in thriving community. Includes fully-equipped hospital. Priced at real estate value. Address Box B 13, JOURNAL of the AVMA.

For sale—mixed practice in Sacramento Valley. Small animal hospital and large animal facilities located on one acre of major highway. Excellent potential. Five year average gross—$33,000. Priced for quick sale. Practice and real estate—$26,000; $4,000 down. Balance financed. Address Box D 14, JOURNAL of the AVMA.

For sale—established small animal practice. Light horse work available. Heart of Bergen County, N. J. Unique opportunity. Address Box D 16, JOURNAL of the AVMA.

For sale—well-equipped, predominately large animal practice in excellent dairy area of Vermont. Finest recreational facilities. Real estate and inventory. Address Box E 13, JOURNAL of the AVMA.

For sale—small animal hospital in Newnan, Ga., with good mixed practice opportunities. Good location. Reasonably priced. Address Box E 9, JOURNAL of the AVMA.

Wanted—Practices

Wanted—Florida small animal practice or land for same. All replies answered and kept in confidence. Available now. Will consider possibilities other than purchase. Address Box E 71, JOURNAL of the AVMA.

Veterinarian (MSU '56) age 28, wants to purchase or lease mixed or small animal practice in Michigan. Also, positions offered with advancement potential will be considered. Replies confidential. Address Dr. Val Vangieson, 519 Cutler, Allegan, Mich.

Wanted—lucrative small animal practice in Tennessee, Alabama, Georgia, Oregon, California, Ohio or other areas. Capital and experienced. All answers confidential. Details in first letter. Address Box E 23, JOURNAL of the AVMA.

Wanted to buy, lease or work for ownership—practice in Washington, D.C. metropolitan area. Have both experience and capital. Would appreciate details in first letter. Address Box E 6, JOURNAL of the AVMA.

Miscellaneous

Wanted—pups with cleft palate or parent dogs of such pups, for study of cause and treatment of human cleft palate. Address Dr. R. Dean or Dr. John Kelleher, c/o Mercy Hospital, 2221 Madison Ave., Toledo 2, Ohio, or call collect CH 8-6428, Toldeo, Ohio.

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Wanted—manager of animal care in San Diego Zoo. Would have line supervisory position over all keepers, report directly to Managing Director's office, have direct authority and responsibility for the care, feeding, hygiene, and welfare of all animal exhibits in the zoo. Would be responsible for the implementation of all programs of the medical and curatorial staff in regard to animal health, hygiene, and care. Minimum of 3 years' past experience in direct supervision at the general foreman level. Two years of accredited college education desirable; 5 years of experience in responsibility for the care, handling, health, hygiene, and welfare of wild or domestic animals. Age—30 to 50 years. Starting salary commensurate with background and experience; minimum—$6,000. Please send resume to James S. Murlin, Director of Personnel, San Diego Zoo, P. O. Box 551, San Diego 12, Calif.

Wanted—senior veterinary student at Colorado State University is interested in obtaining equine dental instruments. Must be in good condition. Please send complete description and price. Address Paul D. Langham, 1226 W. Prospect, Fort Collins, Colo.

For sale—portable Profexray machine and equipment. Price—$250. Address or call Mrs. C. B. Hathaway, Butler, Ind.

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